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Suggestions from industry representatives concerning possible topics for future issues are welcome and should be forwarded to the Editor at the address shown below.

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Back-Up Interceptor Control centers furnish air defense commanders with current information about airborne targets in their areas of control. A standby, high-speed computerized monitor system, BUIC was developed by the AFSC Electronic Systems Division whose story begins on page 1.

Command, Control, Communications Systems— "Musts" in Modern Weaponry

Major General Joseph J. Cody Jr., USAF

Today, communication is the basis of existence of any organized effort. This is certainly true in the Armed Forces and, specifically, in the Air Force where we regard it as a great necessity—in fact we are built upon it.

Coming into focus, more and more, is the association of communications and command and control in the military enterprise. Indeed, the transfer of information within the Air Force is growing. It is growing because we have been provided with the capability of being able to handle and manipulate large amounts of data and related items. We have been provided machinery which has extended our ability to function, far more than we ever were able to do.

Our military operations, in this time period, are highly complex operations involving ultra-sophisticated and very expensive equipment. We have to be certain that we use this machinery so as to optimize it. Common sense dictates that we not buy copies of everything we want, and that we find ways of being more efficient in the use of what we have. Underlying that thesis is what we call command and control and communication in the Air Force.

In the Air Force technical community the problem of designing and acquiring systems for command and control and communication resides at the Electronic Systems Division.

The Electronic Systems Division (ESD) of the Air Force Systems Command was created from several previous organizations on April 1, 1961. Its mission is to manage the de-

velopment, acquisition, installation and test of electronic command, control and communication systems for the Air Force and other agencies of the Defense Department.

Since its establishment eight years ago, ESD has played major roles in nearly every Air Force function which requires fast and accurate command and control. And, when you add communication to this activity then, in essence, ESD finds itself in essentially all kinds and types of military activity.

In this country, technological efforts over the past few years have been tremendous. There has been a rapid surge in the use of computers, data handling, microelectronics, new applications, and in a host of other areas. In fact, there is hardly any area where the state of the art has not significantly advanced.

Command, control and communication, in one sense, is a sort of glue which binds everything within a system together. There are probably deep within the design of a system such things as the ability to enhance weapon system effectiveness in terms of their application, or maybe trade-offs between the numbers of systems and our efficient use of them.

It is not a simple concept. There are no written specifics and numbers which state categorically that we can make a tradeoff. There is, though, a relationship between the effectiveness of our weapon systems and the effectiveness of the control environment in which we have to operate.

The state of the art actually allows us to have a surplus of information.



Major General Joseph J. Cody Jr., USAF, has been Commander of the Electronic Systems Division of the Air Force Systems Command since July 1968. From July 1964 to June 1968, he served in AFSC headquarters as Chief of Staff and later as Deputy Chief of Staff, Systems. Before that he was assigned as Commander of the 6595th Aerospace Test Wing at Vandenberg AFB, Calif. General Cody holds a B.S. degree in physics from St. Mary's University, San Antonio, Tex.

Coupled with this great wealth of information is the real problem of how to cope with it. Our technical know-how can actually produce so much data that we have trouble assimilating it. The problem is double-faced—either we overapply or underapply this information.

As technicians, we at ESD have to recognize and be governed by certain economic considerations. We have to weigh all factors before actually buying a component, a link, or a complete system.

The disciplines and the military missions are merging, and in so doing are creating planning problems. For example, the communications satellite is not selective—it cannot distinguish between tactical and strategic data, and so missions are crossed.

Organization

Located at Hanscom Field, Bedford, Mass., near Boston, ESD is the headquarters for a worldwide organization with detachments and field offices in Europe and Asia.

Approximately 10,000 civilians and military personnel make up a work force which embraces other attached military organizations, federally funded laboratories, a not-for-profit corporation, and private industry groups. In total, the group is commonly called the Hanscom Complex.

ESD is responsible for the evaluation, procurement and production of radar, computers, displays, software (including computer programs), management and production plans. It also supervises quality control, installation and checkout of systems.

Management

The missile age, which called for increased emphasis on command and control, also caused a revolution in management and the end of traditional management methods.

By the early 1950s, with technology already at a gallop and the Soviets possibly as much as several years ahead of us in the development of a strategic missile program, we found ourselves confronted with a number of questions that our management procedures were unable to answer.

Time was at a premium. Design of equipment, scheduling of production, training of field personnel, stocking of

spare parts, construction of sites, and a multitude of other factors all had to be dealt with concurrently, rather than one after the other as in the past.

Technology also was a crucial factor. There were many unresolved questions and a short fuse on the amount of time to get answers. It was crystal clear that management and not technology would determine the pace of America's progress.

The answer which has evolved today is management of systems as total integrated packages.

At ESD each electronic system is handled as a complete package by a system program office (SPO). These come under the jurisdiction of offices called deputies or directorates and cover such general areas as civil engineering, communications, surveillance and control, tactical, planning and technology, and foreign technology.

Functions of the SPO are to create the particular program and follow it closely all the way through its development; determine the hardware and facilities needed; issue contracts to industry; and manage the system to its final operational phase and turn-over to the using command.

While shaping an electronic system, ESD personnel recognize that it is a basic policy and law that the Government must make its own procurements by competition, whether advertised or negotiated. Within most SPOs is a procuring contracting officer who is rigidly governed by the Armed Services Procurement Regulation and Air Force Procurement Instructions.

The contracting officer has the authority to represent the Government with contractors, and is the only one with the power to "authorize or direct" changes, or to discuss information which pertains to new programs or contemplated procurements.

An electronic system is much more than a collection of black boxes. Much more is involved for command and control systems.

Before some systems are truly in working order, ESD must add information to the electronic machinery. This facet of operations, commonly called "software," includes formulation of computer programs which instruct machines to handle the information, and procedures for operator personnel to follow.

A vital link in the chain of successful guidance of complex systems, from the drawing board to the final operational phase, is that aspect referred to as the concept of concurrency.

The concept of concurrency is a common sense approach to a situation which says that precious time in building a system need not be wasted, if logistic support is planned well in advance for all elements and phases of the system. Instead, time is compressed so that each part of the overall project under construction proceeds on a time schedule which is geared to the ultimate completion of the entire system.

Systems management at ESD is conducted in accordance with AFSC's Manual 375 series of regulations. These regulations, authored in part by the military-civilian staff at ESD, are still valid after their acceptance six years ago. The majority of systems acquisitions here are conducted in accordance with the 375 series.

It might be pertinent to point out here that ESD has a number of programs, particularly its Southeast Asia programs, where the operational due date for the systems is so short that it precludes using the standard 375 approach.

At ESD we feel that we have by no means reached the end of the evolution in management. The challenges of the future may call for further innovations. These innovations are not to be feared, but welcomed.

Policy

As the lead division within the Air Force Systems Command for the design and acquisition of command, control, and communications-electronic systems for aerospace forces, ESD maintains an in-house checks and balance system so that its administrative and scientific resources are utilized to the utmost. The goal is qualitatively superior systems.

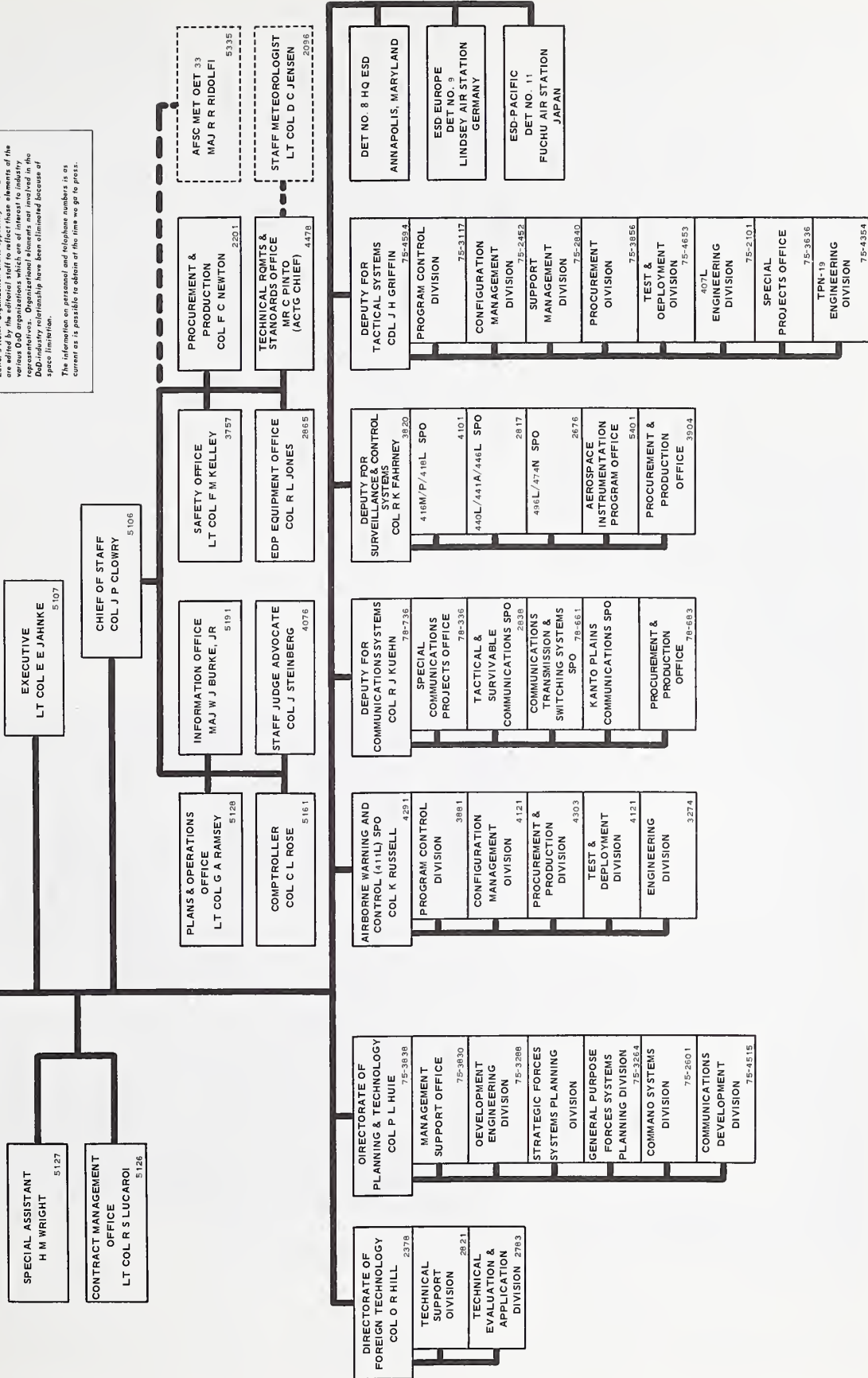
In producing electronic systems with a high order of effectiveness, ESD coordinates and oversees the activities of many organizations. The division, for example, does not have a separate computer effort or a separate communications effort and, instead, relies upon others who operate independently. They are separate in that there is a technical discipline

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*Editor's Note: Organizations shown appearing in the Bulletin are edited by the editorial staff to reflect those elements of the various DoD organizations which are of interest to industry representatives. Organizational elements not involved in the DoD-industry relationship have been eliminated because of space limitation.
The information on personnel and telephone numbers is as current as is possible to obtain at the time we go to press.*



that makes sense for them to be handled separately. But, in terms of work that is produced, they all come together as part of a cohesive whole.

Several organizations have a major role in producing electronic systems and their development. At the top of this list is the MITRE Corp. This civilian, not-for-profit corporation is under contract to the Air Force to provide ESD with systems engineering and technical support.

A key supporting agency within the AFSC family is the Rome Air Development Center, located at Griffiss AFB near Rome, N.Y. This laboratory is oriented toward equipment, rather than to systems as a whole.

Located at Hanscom Field is the Lincoln Laboratory, supported by the Air Force, the Advanced Research Projects Agency, and the National Aeronautics and Space Administration. Its work is principally in electronics, with emphasis on applications to national defense and space exploration.

Also located at Hanscom Field is the Air Force Cambridge Research Laboratory, under the Office of Aerospace Research, with a mission to conduct research in the physical, environmental and mathematical sciences. Staff members serve largely as consultants to ESD and accomplish some direct engineering in weather systems.

Programs and Systems

Electronic command, control, and communication systems fall into general categories such as tactical, strategic, surveillance, weather observing and reporting, air traffic control, navigation, identification, weapons, defense and communications.

A typical electronic command and control system has four functions—to collect, transmit, process and display information. It has sensors of one form or another to collect information, communications lines of all types to transmit the information, computers to process and store data, and equipment to display the gathered data and present it to a commander in a form so that he can plan, direct and control his forces.

Some of the more important and easily identifiable systems which come under the jurisdiction of ESD deputies or directorates follow.

Deputy for Surveillance and Control Systems

This ESD office manages the sensor systems, such as radar, which in reality are the eyes and ears of the command systems. These sensors gather data on missiles, aircraft activities, space objects, weather, intelligence and the control systems that help in the execution of command decisions.

Systems which were developed under the jurisdiction of this deputy, or its predecessor, are the basic Semi-Automatic Ground Environment (SAGE) effort which divided the nation into air defense sectors with a direction center in each sector, utilizing computers which processed data and allowed commanders to follow a battle situation and direct air defense weapons; the Ballistic Missile Early Warning System (BMEWS) with radar sites which fed their information into the SAGE centers; and the Back-Up Interceptor Control (BUIC) system which are dispersed centers in support of SAGE.

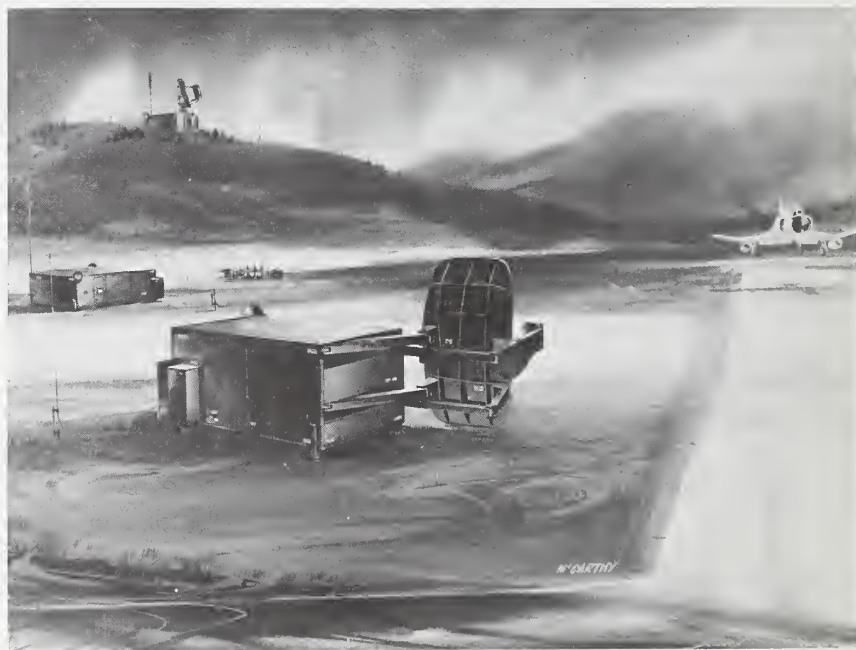
Under this deputy, ESD has a most interesting effort underway in the

planning for an advanced airborne command post. This system will utilize an existing large aircraft and would be used by the National Command Authority, as well as the commanders of unified and specified commands responsible for directing forces during a nuclear war.

Another significant program about to go into contract definition is the Airborne Weather and Reconnaissance System (AWARS). When operational, this system will provide the Air Force Weather Service with a substantially increased capability to collect, process and relay meteorological data to selected ground stations on a global basis.

A potentially large effort for ESD over the next few years under this deputy will be the update of the Worldwide Military Command and Control System.

ESD, which developed command and control systems for the North American Air Defense Combat Operations Center at NORAD, also pioneered in the development of the SPACETRACK system which keeps track of all objects in space and reports its findings to the North American Air Defense Command (NORAD).



LANDING CONTROL CENTRAL AN/TPN-19 tactical communications and control system is now under development. The artist's rendition shows precision approach radar in the foreground, operations center housing traffic controllers to the left, and airport surveillance radar on the hill in the background. All units of the AN/TPN-19 system will collapse into standard size mobile vans for easy transport by truck, helicopter, or aircraft.

The deputy is also responsible for the support provided the National Range Division of AFSC, with test ranges at Cape Kennedy in Florida and Vandenberg AFB, Calif.

An example of this type of support is A/RIA, the Apollo Range Instrumentation Aircraft. This fleet of specially instrumented C-135A aircraft provide two-way voice communications between the aircraft and spacecraft and, in turn, between the aircraft and the Manned Spaceflight Center in Houston to record telemetry information from the spacecraft.

Deputy for Tactical Systems

Currently under development are a number of systems which service the tactical forces. The equipment in these systems is of wide variety and it accomplishes the functions of air control and warning, command and communications, air traffic control, and direct air support.

The tactical environment is growing more involved and complex. The enemy moves quickly, he is elusive, and his lightning strikes are scattered over a wide area. Air power must react on a moment's notice in support of ground troops.

The challenge to get to the commander real-time tactical information is the challenge of the Deputy for Tactical Systems.

Largest among the many systems under development is the 407L acquisition program which produces various ground electronic elements to replace obsolete equipment. The 407L program features modular equipment designed for mobility and deployment by aircraft, helicopter and truck.

Although the 407L program is an evolutionary program, ESD is already involved in planning the next generation tactical command and control system. By the mid-1970s, we expect to see an operational airborne tactical air control system which would supplement the ground elements.

Another tactical system of interest for the future, and now under development by industry under contract to the Air Force, is the TPN-19, Landing Control Central. It is expected to land present and future military aircraft more safely under the most adverse weather conditions.

In the foreseeable future the Air Force can expect to have a tactical command and control system which

uses signals from many different sensors to provide a real-time display of the situation in the surveyed area.

Deputy for Communications

In the Armed Forces, communication is a prime requisite. The Air Force, particularly, depends on it and its function will take on more meaning in future command and control activity. In essence, communication is the vital link between the commander and the various elements in the field.

A recent effort on the part of this deputy was the implementation of the Southeast Asia Coastal Cable Communications System. Under ESD management, a 700-mile undersea cable was laid which connects six shore terminals, five in Vietnam and one in Thailand.

Another recent communications project was the acquisition and installation of automatic switches for the overseas AUTOVON system under the direction of the Defense Communications Agency. These switches were cut into the system last July when the first increment was turned over to the Air Force Communications

Service. This action marked a significant step toward a worldwide military automatically switched communication network.

Looking ahead, what ESD is really faced with in the next five or six years is a total upgrading of the DCA communications system worldwide. This may necessitate further elimination of high frequency circuits, improvement in some of the strategically located troposcatter links, and the addition of satellite and undersea cable links to meet the ever-increasing demands for greater traffic flow.

The advent of satellites has provided a new and exciting mode of communication. Direct, dependable communication by voice or teletype



INTERIOR VIEW of AN/TPS-44 "two dimensional" radar operations center developed by Electronic Systems Division's 407L Tactical Air Control System. Capable of shipment by truck, ground transporter, helicopter, or cargo aircraft, the radar will be used for aircraft detection and control in forward air control posts.

with and among various small tactical units, including ships and aircraft, is of vital importance in many military operations and improved methods are constantly being sought.

The Mediterranean Communication System is a prime example of the scope of effort produced by the Deputy for Communications. The system consists of hundreds of tropospheric scatter and line of sight microwave radio terminals and relays which provide voice and teletype communications to U.S. and NATO installations in the Mediterranean and Near East areas.

Another system of a significant project is the technique called "Compass Link," a method of transmitting high resolution photographs from South Vietnam to Washington, using satellite transmission and a laser beam scanning head to reproduce the pictures for national military commanders.

Digital communications is an area of tremendous potential for the years ahead. We are already in the field of digital switching for data systems, and the outlook is for considerable growth in this area to satisfy increasing requirements for computer-to-computer links.

Airborne Warning and Control System

The Airborne Warning and Control System — acronym AWACS — represents one of the largest, most complex and challenging tasks facing ESD today and in the immediate future. Although not a pure deputy office, or a directorate, in an organizational sense, its complexity involves nearly all of the other SPOs.

Basically, the AWACS undertaking will utilize a modified version of a commercial jet transport embodying a large radar, numerous auxiliary sensors, a substantial data processing capability, and integrated command, control, and communications subsystems.

AWACS is being designed at ESD to provide a command and control capability for both continental air defense and tactical requirements.

The complexity of the radar and related data processing, display and computer engineering represents a significant step forward for the state of the art.

Directorate for Planning and Technology

The next generation of command and control systems is the main interest of the Directorate for Planning and Technology. This organization accomplishes conceptual, feasibility and cost-effectiveness studies, and establishes technical requirements and objectives that lead to assigned goals.

One such system concerning data processing for use in airborne command posts is the Post Attack Command Control System-Airborne Data Automation (PACCS-ADA) project. For this effort, a computer has been placed in an EC-135 aircraft of the Strategic Air Command to evaluate airborne electronic data processing applications for more effective control of forces.

Future Directions

Looking ahead to the mid-1970s, a further exploitation of satellites as communications feeders will undoubtedly come about.

Another point of interest for the future is the search for a better method of applying multiplexing techniques to communications.

With the growth in the use of computers, there seems to be a need for a closer association among computers and their ability to communicate with each other. There is a trend, therefore, that leads to closer integration of computers and communications.

Digital communications is another area of tremendous potential, both for the military user and the industrial contractor.

Exciting and rapid advances in technology and fabrication methods for microelectronic components now make it possible to consider new concepts.

ESD expects increased activity in the coming years in the areas of command and control for strategic operations.

New weapon systems and sensors, such as AWACS and Advanced Manned Strategic Aircraft (AMSA), will necessitate new command and control and communications concepts.

Long-range "over the horizon" radars, which can detect missiles or bombers far beyond the line of sight, will give warning of an impending attack, and will significantly reduce the number of radar sites required.

At ESD we look for reliable, survivable communications between decision centers, from the forward sensor back to the command posts and out again to the weapons. These will become a cornerstone of strategic command and control.

Increased use of satellites with higher bandwidths, power, antenna gain and jamming protection can be foreseen.

Relays, with multi-beam antennas with narrow pencil beams tracking individual mobile user terminals seem an ultimate possibility.

Unified concepts, such as the integrated communication, navigation and identification system (I-CNI), will reduce the number of avionics and will make several modes of long-range or close-range radio transmissions compatible with each other.

Modern weaponry is sophisticated and expensive. It demands, more than ever before, adequate command and control for its effective application.

We at ESD are dedicated to the purpose of trying to make these systems as efficient as possible, and to assure that they make contributions to the effectiveness of the total military operation.

ESD's story is that of taking technical and managerial skills from all available sources and uniting these to develop, design and acquire superior electronic command and control and communications systems.

The intelligent application of these capabilities and potentials is our business—that is our sole role in life.

Army Testing Detachable Tire Treads

Detachable-tread tires are under test by the U.S. Army Tank-Automotive Command, Warren, Mich. Test units have a carcass that separates from the tread band; the detachable tread is mounted on the deflated carcass, locking into place when the tire is inflated.

Advantages of the detachable-tread tire is that one carcass may be used for many treads; storage space requirements and operating costs should be reduced by just having to replace the tread, as long as the carcass is undamaged.

According to the Army, one carcass should last through four or five treads.



FROM THE SPEAKERS ROSTRUM

Trends in Research and Development at Army Mobility Equipment R&D Center

Address by William B. Taylor, Technical Director, U.S. Army Mobility Equipment Research and Development Center, Ft. Belvoir, Va., to the Graduation Class, Research and Development Management Course, U.S. Army Logistics Management Center, Ft. Lee, Va., Aug. 29, 1969.

This afternoon I had originally planned to regale you with slides and movies in an illustrated talk of some of the weird and wonderful new items of military hardware which are in various stages of development at the U. S. Army Mobility Equipment Research and Development Center (MERDC)*. However, after looking at your agenda for the past two weeks, I [decided] that perhaps you would prefer a more philosophical discussion on some of the lessons we are learning from past problems in testing and fielding new military hardware, and the way in which we are attempting at MERDC to apply results of these lessons to improve our overall "batting average" in getting significant new equipment into the hands of troops.

During the past several years, there have been numerous occasions when items of MERDC equipment, such as engine generators, bridges, construction equipment, air conditioners, POL handling equipment, etc., have failed to pass the stringent gamut of engineer and service tests at the Aberdeen, Ft. Greely, Ft. Knox and Panama test sites of the Army Materiel Command's Test and Evaluation Command (TECOM). These failures range from relatively minor

**MERDC, located at Ft. Belvoir, Va., is an organizational element of the U.S. Army Mobility Equipment Command, St. Louis, Mo., which is a subordinate command of the Army Materiel Command.*

shortcomings relating to a small component, such as a relay or valve (which indicates a need for tighter quality control), to near-catastrophic failures of major subassemblies which clearly indicate that the item should be redesigned.

Regardless of the seriousness of the failure, considerable additional effort is required by the development organization engineers, as well as those of the Army commands who are the users and testers of proposed answers by the developers to the users' stated requirements. Either the failure has to be corrected, or the details of the users' requirements for the item have to be modified to permit the item to be acceptable. In either case, lengthy delays in the fielding of the new equipment invariably result from *any* failure of an item to pass TECOM's testing.

Review of Lessons Learned

At MERDC this past spring, we decided that a critical review of some selected items that had failed engineer/service testing at TECOM was needed to identify "lessons learned" to form a basis for significantly improving our ability to get items through engineer/service testing on time, the first time. I would like to share with you the analysis we did, the results we came up with, and the approach we are taking to apply these results to improve our future performance.

For this analysis, we focused our attention on the universal engineer tractor, probably known to many of you as the UET. Development of the UET began a number of years ago, based on a stated requirement for a quantum jump improvement in combat engineering construction equipment to be used by engineer troops; air-delivered into forward combat zones; and required to move



William B. Taylor was appointed Technical Director of MERDC in 1969. He was formerly scientific advisor for missiles and space in the Office, Chief of Research and Development, Department of the Army. Prior to that he held positions in the manned space flight program of National Aeronautics and Space Administration. He is a graduate of the U.S. Military Academy, West Point, the U.S. Naval Post-Graduate School, and holds a master of science in electronics engineering from The Johns Hopkins University.

earth, build runways, etc., under adverse conditions of rough terrain, limited logistic support, and enemy action.

The UET design was completed and prototype models were tested at MERDC, following which engineer/service-test models were procured for TECOM tests against the specified requirements stated in the Qualitative Materiel Requirement (QMR). These initial test models fell short of the QMR in a number of areas but, in order to expedite the development cycle to meet an ENSURE [Expedited Non-Standard Urgent Requirement] Southeast Asia requirement, additional models were procured under advanced production engi-

neering (APE) funds; some "improvements" were added to the design, and the modified APE models were subjected to further engineer/service testing. The second set of UETs also experienced difficulty, primarily in the areas of reliability and maintainability, and further modifications to the UET were identified as being desirable. Nevertheless, the urgent Southeast Asia requirements for improved earth-moving capabilities in forward areas prompted a plan for limited production of approximately 50 UETs.

Analysis of the several thousand hours of UET prototype test data and of life-cycle cost estimates indicates that the UET can outperform existing inventory dozers, scrapers and dump trucks by factors of 2 or more, and can save from \$1 to \$2 million per battalion over the 10-year life cycle (primarily because of fewer operators doing the same jobs). However, approval of a limited production buy of UETs has still not been authorized because of the problems identified during engineer/service testing. At the present time, some 10 years after the requirement was established, preparations are being made for a major in-process review soon to determine the future of the UET.

Search for Improved Development Performance

The question we asked ourselves last spring was: How can we improve the performance and shorten the development lead time on an item like the UET, if we were starting today? After going into the details of the design and test history, and comparing both the performance of the various contractors involved, the changes in requirements, and the analysis of previous test data, we concluded that there are three major areas that need concentrated effort by the MERDC developer as well as other members of the Army Materiel Command and the Army Combat Developments Command. These three areas are:

- More realistic requirements (QMRs).
- Improved contracting techniques.
- Improved test plans and procedures.

Let us take these item by item.

More Realistic QMRs.

A fundamental means of avoiding downstream difficulties is to assure at the outset that the users' requirements are both technically attainable and operationally essential in terms of field needs. Obviously, many of the requirements defined before development starts have a degree of uncertainty which must be reduced as development proceeds. Therefore, as the development progresses the requirements should be re-examined when more technical tradeoff data is available. There is a need for a periodic, critical reexamination of the QMR during development of the item, by both the users and developer, recognizing both the technical problems and the costs associated with overcoming them.

These critical reviews require not only the attention of the project engineer in the Army Materiel Command and his counterpart in the Combat Developments Command, but also by the management levels in both agencies. This review should be conducted by civilian engineers to assess the technical and cost achievability of the performance goals, as well as by field grade military officers to assess the essentiality of the qualitative and quantitative requirements for actual field operations. There should be at least two such critical reviews on each QMR: the first prior to formal approval of the QMR by the Department of the Army, and the second after prototype models have been built and tested by the engineers who designed and built them, but before the subsequent models are procured for TECOM's engineer/service testing. This latter review should permit, if necessary, both modification of QMR requirements, based on actual test data, as well as feasible design modifications which could make the engineer/service-test prototypes more responsive to the modified QMR.

Improved Contracting Techniques.

The second lesson learned is that we should improve our contracting provisions for procuring prototype and engineer/service-test models. The normal engineering development cycle calls for contracting for prototype design, fabrication and initial test by the developers (including the contractor) with a subsequent contract (with the same or another contractor)

for fabrication of the engineer/service-test models for TECOM tests.

Our objective in improving this arrangement is to place more responsibility on the contractor for the satisfactory performance of test units throughout the period of government testing, including the tests by TECOM which are normally conducted without the contractor's participation. Contracts should clearly state what government tests will be run on the item and that, until the equipment has demonstrated the required performance, the contractor is responsible for the item. In other words, completion of the contract should include satisfactory performance of the item that TECOM tests. In order to do this, we must clearly spell out in the contract the testing we intend to perform, and we must stay within these test parameters if the contractor is to be held responsible. The contract must specify that any failure of the item to meet the performance requirements will require the contractor to modify the item as necessary, at no additional cost to the Government.

In contracting for the TECOM test models, we have the problem of how to require the contractor to build to the drawings resulting from the pre-TECOM development tests and still hold the contractor responsible for meeting the TECOM test requirements. This is a problem since the contractor is normally not involved in the TECOM tests. The problem is compounded if a different contractor is selected from competitive proposals to build the TECOM test models. A feasible approach is to use a form of the new pre-production evaluation (PPE) type contract (now normally used in the first-quantity production contract). Under a PPE contract, the new contractor would be required to make a thorough analysis of the prototype test model drawings, and to recommend any changes he considers necessary for successful achievement of the performance requirements of his contract. After this "open season" on changes (usually a month or two), the contractor is held responsible for producing units which will meet the specified performance requirements. Also, in such contracts, it appears possible to include some form of performance warranty clause under which the contractor agrees to "fix" any item which fails in the TECOM

tests, provided the tests are no more severe than those previously conducted during the developer's prototype tests. This warranty clause should cover the entire period of TECOM tests (often as long as 18 months). Of course, the contractor's price will include some provision for making these fixes but he is motivated to build an item which requires no fixes and, most importantly, he will be required to maintain financial responsibility for the performance of his item during TECOM tests.

Improved Test Plans and Procedures.

The third and possibly the most important lesson learned, which we at MERDC are applying to our current developments based on past problems, has to do with improving our test plans and procedures. Comprehensive and well defined test plans and procedures for prototype testing by MERDC and the contractor are the key to the actions in refining QMRs and in maintaining contractor responsibility through TECOM's tests, which I have just discussed. We will establish and enforce controls to require that total test procedures and plans are reduced to writing by the project engineer, and then approved and periodically reviewed at the intermediate and higher MERDC management levels. TECOM will be included in the development of MERDC test plans and procedures. Test requirements in research and development contract purchase descriptions will define specific tests which will yield quantitative results, suitable for determining the compliance of the contract with each requirement in the QMR.

The results achieved during MERDC prototype tests can then be the basis for revising test procedures to be included in TECOM test plans. We recognize that this more comprehensive and thorough MERDC testing may add to the time required before models are made available to TECOM for final engineer/service testing. However, our experience indicates that in the overall development cycle, a little additional time during MERDC testing can reduce significantly the overall development time, and hasten the day when an item will pass TECOM's tests with flying colors and go into production for use by troops.

To recapitulate, then, we have ex-

amined our past experience in getting research development items through TECOM tests and into quantity production. From this experience—some of it quite dismal—we have drawn some lessons learned and are applying them to our current and future efforts in three major areas:

- Initial definition and subsequent refinement, with the Combat Developments Command, of more realistic requirements (QMRs).

- Modified contracting techniques to motivate our industrial partners to retain a sense of responsibility for the performance of the equipment throughout its acceptance testing cycle.

- More thorough and stringent development prototype testing—an abbreviated engineering/service testing, if you will—to permit both refinement of the QMR and modification of engineer/service-test model designs *before* subjecting the item to TECOM test.

I thank you for this opportunity to share with you our lessons learned. I hope they will be of some use to you in achieving our common goal of getting better equipment into the hands of troops sooner.

Unmanned Cargo Planes Planned for Army

Remote controlled, unmanned aircraft for use as combat zone supply transports are being considered by the Army under a proposed requirement for the Transport Assault Supply Transporter (TAST).

As conceived by the Army Combat Developments Command (CDC), Fort Belvoir, Va., TAST will be used to fly into battlefield areas at low altitudes, within the range of small arms fire, with up to 1,000 pounds of cargo. Guided from remote ground stations, TAST will provide supply operations to frontline areas regardless of weather or terrain.

TAST would be used in areas where loss rates for manned aircraft are normally high. Initial plans include TAST platoons for use in direct support of infantry and other combat units, leaving manned aircraft for other missions.

Future roles for TAST could also include wire laying, smoke dispensing, radio communication relay and, if necessary, emergency medical evacuation.

Army Proposes New Artillery

Three new artillery weapons have been proposed by the Army Combat Developments Command (CDC), Fort Belvoir, Va., for use in tactical field support operations.

The first, the aerial artillery weapon, would accomplish the tasks of present aerial rockets and light, close support cannon artillery. In use, the weapon would have both air-to-ground and ground-to-ground capabilities. Combined with single VTOL aircraft transportability, the weapon would reduce the overall number of aircraft required for airmobile support. At present, separate aircraft are required for rockets and cannon artillery.

The second weapon is the self-propelled armored 155mm howitzer, which would replace the M109 and M109E1 howitzers. As proposed, the new weapon would provide direct support of heavy divisions, specified cavalry regiments, and Corps/Army battalions supporting mechanized and armored units.

The third weapon, the towed 155mm howitzer, would replace the M114A1 howitzer, providing general support and reinforcing fire by field artillery battalions assigned to Corps/Army.

All three proposals are part of the Army 85 program.

AFSC Realigns Conventional Munitions Centers

The Air Force System Command has announced completion of the transfer of engineering and technical personnel from the Air Force Armament Laboratory (AFATL) to the Armament Development and Test Center (ADTC), both located at Eglin AFB, Fla.

The transfer, begun in April 1969, brings into alignment the research development efforts for non-nuclear munitions. ADTC, which has had the managerial responsibility since August 1968, now has under its control the related functions of engineering and acquisition. AFATL will concentrate on its primary mission of research, and exploratory and advanced development.

Centralized Supply Information for DOD, Industry

Captain Ross A. Porter, SC, USN

If the Army has a requirement for aircraft carburetors, a query to the Defense Logistics Services Center (DLSC), Battle Creek, Mich., might reveal that the Marine Corps has carburetors it no longer needs. A defense contractor can also locate excess DOD equipment or parts, needed to perform under his contract, in a similar manner.

The services of DLSC, a field activity of the Defense Supply Agency (DSA), influence industry's relations not only with DOD but other government agencies and with certain foreign governments. Particularly affected are industry organizations concerned with the preparation of bid packages for defense contracts. Other industries, such as those acquiring government-furnished equipment and those buying government surplus, are also directly and indirectly affected by the services provided by DLSC.

Because of the center's services to Federal agencies and, to a progressively greater degree, to government suppliers, defense costs are being reduced significantly. Direct interface with industry is developing as DLSC personnel and computer resources permit.

DLSC's services currently are encompassed in three distinct programs: operational responsibility for the Federal Catalog System, the DOD Material Utilization Program, and the DOD Surplus Sales Program.

DLSC has an interest in the characteristics of an item of supply from the time of its design to its disposal from the government inventory.

Until DLSC was established, this

data, or intelligence, interface between present DLSC programs was almost nonexistent. The scores of categories of vital logistics item data, assimilated for decades in these programs, are being progressively integrated into one computerized data bank called the Defense Integrated Data System (DIDS) — DLSC's future system. This system will place all data relating to an item of supply (except stock, store and issue information) in a single integrated data bank.

The integrated computer system to be used to support DIDS will probably dwarf, in mass storage capability and random access processing techniques, any known business-oriented system. It will have an initial mass storage capacity of over 13 billion characters, with the capacity to grow to 20 billion. These data will be readily accessible for use not only by DLSC program managers but by logisticians in various assignments, worldwide.

At present it is not envisioned that remote devices will be located at contractor facilities. However, because of the advances of computer hardware technology, and the emphasis on creation of common computer language and universal data nets, it is possible that in the future direct inquiry of DLSC's supply item intelligence might be possible for major contractors.

DLSC services that interest contractors and potential contractors mostly involve the products of the DLSC level of management relative to the Federal Catalog System.

Inherent in this responsibility is assignment of Federal Stock Numbers

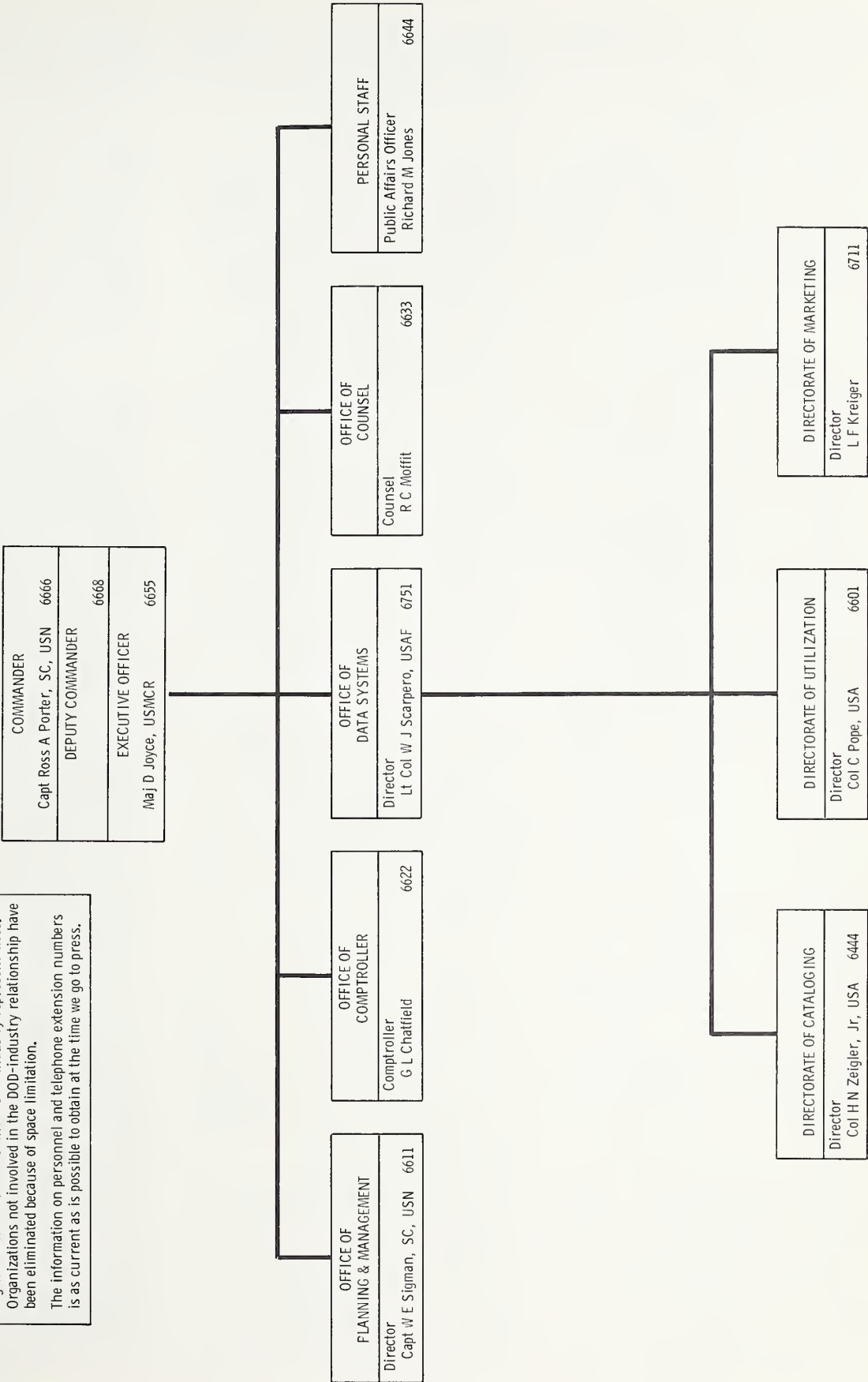


Captain Ross A. Porter, SC, USN, has been Commander of the Defense Logistics Services Center since June 1, 1967. Previously, he served as Supply Officer, San Francisco Bay Naval Shipyard, Vallejo, Calif., and as a member of the staff of the Naval War College. Captain Porter holds a B.S. degree from Northwestern University, and is a graduate of the Advanced Management Program of the Harvard School of Business Administration.

DEFENSE LOGISTICS SERVICES CENTER

Federal Center
Battle Creek, Mich., 49016
Telephone: (616) 962-6511

Editor's Note: Organization charts appearing in the Bulletin are edited by the staff to reflect those elements of the various DOD organizations which are of interest to industry representatives. Organizations not involved in the DOD-industry relationship have been eliminated because of space limitation.
The information on personnel and telephone extension numbers is as current as is possible to obtain at the time we go to press.



(FSNs) for DOD customers, as well as for civil agencies, NATO signatory countries, and for several other foreign governments.

FSNs are assigned to those items which are repetitively procured, stocked, controlled and subjected to central inventory management, reporting, distribution, or redistribution in the supply system of the Army, Navy, Air Force, and Marine Corps, and civil agencies of the Government. The FSN is a common means of retrieving data from DLSC records.

Process of Provisioning Screening

DLSC becomes involved with an item of supply during the weapon system provisioning process by furnishing an item intelligence service that determines the need for FSN assignment. This involvement in the provisioning aspect of logistics provides, early in the procurement process, item identification and other vital supply management data.

An industry benefit of provisioning screening is that it does not burden suppliers with production of technical documentation that might already be in DLSC files. Data is provided that enhances the transfer of excess property, thus preventing the purchase of unnecessary spare parts. It also helps expand the procurement base.

To accomplish provisioning screening, the industry contractor or government procuring activities submit data, consisting of the manufacturers' codes and part numbers, to determine if the item has been assigned an FSN and is already recorded as an active item in the U.S. Government supply system. Computers are used to compare input data with the data on file.

During FY 1968 approximately 6 million provisioning queries were processed by DLSC. Over 40 percent of the queries disclosed availability of duplicate items.

Also of interest to industry is the Federal Supply Code for Manufacturers (FSCM) assigned and maintained at DLSC. We assign five-digit identifying numbers to manufacturers who qualify as sources of supply. Currently the FSCM files list 58,000 firms.

Two methods are used to compare items suggested for entry into the

supply system with the current catalog data. They are the reference method and the descriptive method. Both are designed to minimize the entry of *new items* into the system by identifying duplicate items.

The reference method is accomplished by screening manufacturers' codes and manufacturers' part numbers against the existing part number file of 9 million part numbers. A little over half of the 4.5 million items in the Federal Catalog System, with a registered government customer interest, are identified through a comparison process in this manner.

The descriptive method, which is the preferred and the most effective method of item entry control, requires submission of item identification characteristics data in a uniform, computer processable mode. The method significantly enhances our ability to delineate like items by visual or machine comparison of characteristics.

The latter is accomplished by using Descriptive Patterns (DPs) and/or the new Federal Item Identification Guides (FIIGS). Both provide guides that aid in the preparation of item characteristic submission in a machine processable mode.

There is a concentrated effort to have as many items as possible in the Federal supply system cataloged in the descriptive mode. The entry of as many items into the Federal Catalog System in the description mode, and the conversion of items already in the system to this mode, will also exploit the capability of our upcoming DIDS computer system with its gigantic data bank.

Master Cross Reference List

Early last year DLSC compiled, printed and distributed to the four Military Services a Master Cross Reference List (MCRL). The MCRL references over 9 million industry part numbers to FSNs. It contains the FSCM and the applicable FSN related to part number(s).

The consolidated MCRL, containing items used by all the Military Services, is available to industry and other interested organizations for \$200 a year from the U.S. Government Printing Office, Sales Planning Section, P.O. Box 1533, Washington, D.C. 20013. This annual subscription cost includes supplements. Initially, the sheer size of the 65-volume appears

frightening. It is indexed, however, to speed identification of part numbers. It is a valuable aid in identifying the relationships of part numbers to FSNs. The cognizant military procurement office will help establish FSN-manufacturers part number relationships for contractors performing under contracts which include provisioning screening procedures.

There are many Federal cataloging publications that can also help contractors fulfill government cataloging obligations. These publications can also be purchased from the Superintendent of Documents, U.S. Government Printing Office. An index of these publications, containing a synopsis of each publication, will be furnished by DLSC upon request.

In natural sequence of the government's logistic cycle, DLSC operates the DOD materiel utilization program. The primary purpose of this program is to satisfy the needs of any one Military Service by redistributing materiel which may be excess to other Military Services. To the extent possible, computer programs at DLSC use the Federal Item Identification Number (FIIN), a portion of the FSN, to match requirements to excess assets.

Last year nearly \$1 billion worth of materiel was referred to Federal agencies who indicated a need for specific excess items. Hundreds of millions of dollars worth of materiel referred was accepted.

To a progressively greater degree, DOD contractors are also availing themselves of this source to obtain equipment needed to fulfill government contracts.

The primary communication media used to apprise contractors of available materiel are direct mail in the form of printed excess listings, flyers and brochures. Last year, through these media, one government contractor was able to locate excess DOD equipment valued at over \$800,000 needed by his firm to perform under his contract. Acquisition of government furnished equipment supplements tight budgets, speeds fulfilling contracts by reducing lead time, and also saves tax dollars.

To benefit from this source of equipment, write to the Director of Utilization, Defense Logistics Services Center, Federal Building,

(Continued Inside Back Cover)

Top 100 Defense Contractors Announced

Top 100 Companies and Their Subsidiary Corporations Listed According to Net Value of Military Prime Contract Awards Fiscal Year 1969 (July 1, 1968—June 30, 1969)

Corporate acquisitions and mergers in FY 1969 continued to affect the makeup of the DOD list of 100 companies which, together with their subsidiaries, were awarded the largest dollar volume of military prime contract of \$10,000 or more. These 100 companies accounted for \$25.2 billion, or 3.8 percent less than in FY 1968, while total awards to all U.S. companies were down by 5 percent to \$36.9 billion. The top 100 companies received 68.2 percent of the FY 1969 total compared with 67.4 percent in the previous year. Contributing to the higher percentage awarded the top 100 was not only corporate restructuring, but also increases in the procurement of ammunition and of missile and space systems, highly concentrated industries, while concurrent decreases were being experienced in the procurement of clothing and textiles and other commercial type items.

The following list shows that the first five companies received 18.9 percent of the total received by all U.S. companies in FY 1969. This was lower by 1.7 percentage points than was recorded by FY 1968; however, the percentage for the next 20 companies totaled 25.9 percent or almost 1 percent more than in FY 1968. The largest company in FY 1969 received awards aggregating \$2,040 million, compared with \$2,239 million for the largest in FY 1968. To be included in the list in FY 1969 required \$48 million in awards, against \$50 million in FY 1968.

The FY 1969 list of the top 100 companies shows 12 companies which did not appear on the list for FY 1968. Of these 2 appear between positions 51 and 74, and the remaining 10 between positions 76 and 100.

Companies listed in FY 1969 but not in FY 1968 are:

Aluminum Company of America
Atlantic Richfield Co.
Dynalectron Corp.
Firestone Tire & Rubber Co.
Flying Tiger Line, Inc.
Kidde (Walter) & Co., Inc.
Le Tourneau, R. G., Inc.
National Gypsum Co.
Southern Airways, Inc.
Talley Industries, Inc.
Tumpane Co.
Whittaker Corp.

Companies listed in FY 1968 but not in FY 1969 are:

Aerodex, Inc.
Atlas Chemical Industries, Inc.
Automatic Sprinkler Corporation of America
Condec Corp.
Emerson Electric Co.
International Harvester Co.
Johns Hopkins University (N)
Lykes Corp.
Mason & Hanger Silas Mason Co.
Susquehanna Corp.
Vinnell Corp.

Of the 88 companies appearing in both the FY 1968 and FY 1969 lists, 49 bettered their position, 33 were in a lower position and 6 showed no change. Companies are considered as appearing on the list in both years despite mergers and name changes if a major component of a newly constituted company made the list in both years.

Listing of the top 100 companies and their subsidiaries, in order of rank, is given below. The report is compiled by the Directorate for Information Services, Office of the Assistant Secretary of Defense (Comptroller), Washington, D. C. 20301.

RANK	COMPANIES	THOUSANDS OF DOLLARS
	U.S. TOTAL ^a	\$36,888,601
	Total, 100 Companies and Their Subsidiaries ^b	26,175,240
1.	Lockheed Aircraft Corp	2,004,423
	Lockheed Shipbuilding Construction	35,752
	Ventura Mfg Co.	61
	TOTAL	2,040,236

2.	General Electric Co	1,619,095
	General Electric Supply Co	1,680
	TOTAL	1,620,775
3.	General Dynamics Corp.	1,228,903
	Dynatronics, Inc.	448
	Stromberg Carlson Corp.	10,680
	Stromberg Datagraphics, Inc.	2,879
	United Electric Coal Co.	145
	TOTAL	1,243,055
4.	McDonnell Douglas Corp	1,031,752
	Advanced Communications, Inc	524
	Conductron Corp	32,021
	Hycon Mfg Co	4,862
	Tridea Electronics, Inc	584
	TOTAL	1,069,743
5.	United Aircraft Corp	997,380
6.	American Telephone & Telegraph Co	152,349
	Chesapeake & Potomac Telephone Co	13,939
	Illinois Bell Tel Co	217
	Mountain States Tel & Tel Co	1,688
	New England Tel & Tel Co	564
	New Jersey Bell Tele- phone Co	578
	New York Telephone Co	52
	Northwestern Bell Tele- phone Co	236
	Ohio Bell Telephone Co	270
	Pacific Northwest Bell Telephone Co	145
	Pacific Telephone & Telegraph Co	172
	Southern Bell Telephone & Telegraph Co	2,325
	Southwestern Bell Tele- phone Co	1,729
	Teletype Corp	16,926
	Western Electric Co, Inc	723,389
	TOTAL	914,579
7.	Ling Temco Vought, Inc	26,554
	Altec Service Co	32
	Braniff Airways, Inc	43,327
	Computer Technology, Inc	54
	Continental Electronics Mfg Co	3,895
	Jefferson Wire & Cable Corp	138
	Jones & Laughlin Steel Corp	2,803
	Kentron Hawaii, Ltd	15,448
	L T V Electrosystems	182,160
	L T V Aerospace Corp	617,706
	L T V Ling Altec, Inc	770
	Okonite Co The	997
	Service Technology Corp	10,645
	Staco, Inc	11
	Tamar Electronics Industries, Inc	125
	Wilson & Co, Inc	9,154
	Wilson Sporting Goods Co	295
	TOTAL	914,114

8. North American Rockwell Corp	673,840	Litton Precision Prods, Inc	8,524	27. Intl Business Machines Corp	256,304
Morse Controls, Inc	201	Litton Systems, Inc	291,890	Science Research Associates, Inc	177
Remmert-Werner, Inc	134	Monroe International, Inc	127	Service Bureau Corp	142
TOTAL	674,175	New Britain Machine Co	208	TOTAL	256,623
9. Boeing Co	653,638	Streater Industries, Inc	20	28. Raymond Morrison Knudsen (JV)	254,000
10. General Motors Corp	584,407	TOTAL	317,102	29. International Telephone & Tel Corp	120,206
Frigidaire Sales Corp	32	22. Teledyne, Inc	62,559	Barton Instrument Corp	27
TOTAL	584,439	Adcon, Inc	277	Bobbs-Merrill Co, Inc	11
11. Raytheon Co	542,817	Amelco, Inc	3,816	ITT Continental Baking Co	1,746
Edex Corp	15	Brown Engineering Co, Inc	3,256	E T C, Inc	79
Heath DC & Co	25	Columbia Steel & Shafting Co	39	Federal Electric Corp	66,088
Machlett Laboratories, Inc	3,470	Columbia-Summerill Corp	27	ITT Electro Physics Laboratories	3,044
Micro State Electronics Corp	102	Continental Aviation & Engr Corp	38,116	ITT Gilfillan, Inc	38,643
Raytheon Education Co	73	Continental Device Corp	56	ITT Hammel Dahl	11
Seismograph Service Corp	270	Continental Motors Corp	64,897	ITT Technical Services, Inc	8,392
TOTAL	546,772	Electro Development Co	33	Jennings Radio Mfg Corp	20
12. Sperry Rand Corp	467,861	Geotechnical Corp	93	TOTAL	238,267
13. Avco Corp	456,054	Getz William Corp	105	30. Tenneco, Inc	
14. Hughes Aircraft Co	438,756	Gill Electric Mfg Corp	755	Davis Mfg, Inc	203
Meva Corp	260	Gurley (W & LE)	308	Gas Equipment Engrs, Inc	15
TOTAL	439,016	H & H Engineering Co	20	Newport News Shipbld & Dry Dock Co	236,024
15. Westinghouse Electric Corp	424,175	Hydra Power Corp	289	Tenneco Chemicals, Inc	467
Electro Insulation, Inc	15	Isotopes, Inc	1,103	TOTAL	236,579
K-W Battery Co	197	Kinetics Corp	122	31. Dupont E I De Nemours & Co	41,582
Sanford Marine Services, Inc.	67	King Metal Products, Ltd	24	Remington Arms Co	170,383
Thermo King Corp	294	McKay Co	63	TOTAL	211,965
Thermo King Sales & Service	12	Micronetics, Inc	70	32. F M C Corp	189,639
Urban Systems Dev Corp	2,911	Milliken D B Co, Inc	217	Gunderson Bros Engineering Corp	3,807
Westinghouse Electric Intl, SA	278	Monarch Rubber Co	74	Kilby Steel Co, Inc	2,179
Westinghouse Electric Supply Co	886	Ordnance Specialties, Inc	135	TOTAL	195,625
Westinghouse Learning Corp	723	Packard Bell Electronics Corp	5,906	33. Norris Industries	187,553
TOTAL	429,558	Pines Engineering Co, Inc	14	34. Bendix Corp	177,806
16. Textron, Inc	13,776	Republic Mfg Co	119	Bendix Field Engineering Corp	5,923
Accessory Products Co	29	Ryan Aeronautical Corp	121,233	Bendix Westinghouse Automotive	129
Aetna Bearing Co, Inc	34	Techdata, Ltd	37	Fram Corp	433
Bell Aerospace Corp	412,700	Thermatics, Inc	13	Marine Advisers, Inc	31
Camcar Screw & Mfg Co	140	Wah Chang Corp	55	P & D Mfg Co Inc	78
Fafnir Bearing Co	542	Wisconsin Motor Corp	4,698	Scott Testers, Inc	37
Textron Electronics, Inc	606	TOTAL	308,455	TOTAL	184,437
Townsend Co	435	23. R C A Corp	298,868	35. Hercules, Inc	179,364
Walker-Parkersburg	17	National Broadcasting Co, Inc	13	Haveg Industries, Inc	258
Waterbury Farrel	11	RCA Defense Electronics Corp	91	TOTAL	179,622
TOTAL	428,290	RCA Institutes, Inc	20	36. Northrop Corp	106,992
17. Grumman Aircraft Engineering Corp.	417,052	TOTAL	298,992	Hallcrafters Co	32,468
18. Honeywell, Inc	405,575	24. Standard Oil Co (New Jersey)		Northrop Carolina, Inc	4,874
19. Ford Motor Co	67,202	American Cryogenics Inc	85	Page Communications Engineers, Inc	34,311
Philco Ford Corp	329,131	Enjay Chemical Co	216	Warnecke Electron Tubes, Inc	262
TOTAL	396,333	ESSO A G	1,302	TOTAL	178,907
20. Olin Matheison Chemical Corp	354,359	ESSO International Corp	151,098	37. Uniroyal, Inc	174,061
21. Litton Industries, Inc	14,586	ESSO Petrol Co, Ltd	66	Uniroyal International Corp	27
Aero Service Corp	200	ESSO Research & Engineering Co	885	TOTAL	174,088
Allis (Louis) Co	220	ESSO Standard Eastern, Inc	224	38. T R W, Inc	169,487
American Book Co	24	ESSO Standard Italiana	2,463	Crescent Insul Wire & Cable Co, Inc	73
Bionetics Research Laboratories	213	ESSO Standard Oil Co S A	5,001	Globe Industries, Inc	316
Clifton Precision Products Co	11	ESSO Standard Thailand, Ltd	78	Gregory Industries, Inc	12
Ingalls Shipbuilding Corp	1,052	Humble Oil & Refining Co	129,635	International Controls Corp	380
Kimball Systems, Inc	27	TOTAL	291,053		
		25. Martin Marietta Corp	264,279		
		26. General Tire & Rubber Co	8,307		
		Aerojet Delft Corp	272		
		Aerojet General Corp	212,924		
		Batesville Mfg Co	41,154		
		Frontier Airlines, Inc	45		
		General Tire International Co	799		
		TOTAL	263,501		

Ramsey Corp	33	52. Texaco, Inc	22,966	Pratt & Whitney, Inc	2,407
T R W Semiconductors, Inc	29	Caltex Asia, Ltd °	2,866	TOTAL	114,425
United-Carr, Inc	49	Caltex Australia °	12	63. Eastmen Kodak Co	108,998
TOTAL	170,379	Caltex Oil Products Co °	61,279	Eastman Chemical Products Corp	48
39. Pan American World Airways, Inc	167,437	Caltex Oil Thailand, Ltd °	2,057	Eastman Kodak Stores, Inc	764
40. Asiatic Petroleum Corp	155,583	Caltex Overseas, Ltd °	310	Kodak Export, Ltd	38
41. Mobil Oil Corp	151,479	Caltex Philippines, Inc °	70	TOTAL	109,848
Mobil Chemical Co	12	Jefferson Chemical Co, Inc	695	64. City Investing Co	
Mobil Oil New Zealand, Ltd	24	Texaco Export, Inc	30,305	American Electric Co	43,818
TOTAL	151,515	Texaco Puerto Rico, Inc	2,855	Hayes Holding Co	50,431
42. Standard Oil Co of Calif	73,406	Texaco Trinidad, Inc	17	Moe (A E) & Co, Inc	15
Caltex Asia, Ltd °	2,866	White Fuel Co, Inc	541	Rheem Mfg Co	247
Caltex Australia °	13	TOTAL	123,973	Wells Marine, Inc	14,613
Caltex Oil Products Co °	61,280	53. Chrysler Corp	117,688	Wilson Shipyard, Inc	75
Caltex Oil Thailand, Ltd °	2,058	Chrysler Outboard Corp	4,128	TOTAL	109,199
Caltex Oversea, Ltd °	311	TOTAL	121,816	65. Whittaker Corp	60,195
Caltex Philippines, Inc °	70	54. Pacific Architects & Engineers, Inc	120,959	Aircraft Hydro-Forming, Inc.	345
Chevron Asphalt Co	33	55. Sanders Associates, Inc	117,707	American Finishing Co	159
Chevron Chemical Co	552	Mithras, Inc	775	Berwick Forge & Fabricating Corp	174
Chevron Oil Co	3,323	TOTAL	118,482	Columbus Milpar & Mfg Co	27,224
Chevron Oil Trading Co	273	56. United States Steel Corp	109,720	Detroit Bolt & Nut Co	35
Chevron Shipping Co	192	Reactive Metals, Inc	291	General Aerospace Materials Corp	412
Standard Oil Co Kentucky	4,396	US Steel International, Inc	7,787	Hol-Gar Mfg Corp	3,438
TOTAL	148,773	TOTAL	117,798	Jenks Metals Co	880
43. Fairchild Hiller Corp	148,549	57. Goodyear Tire & Rubber Co	57,878	May Aluminum, Inc	402
Burns Aero Seat Co, Inc	37	Goodyear Aerospace Corp	56,484	Nautec Corp	66
TOTAL	148,586	Motor Wheel Corp	2,098	Precision Forge Co	980
44. Collins Radio Co	145,751	TOTAL	116,460	Space Sciences, Inc	266
45. Kaiser Industries Corp	495	58. Singer Co	1,301	Straightline Mfg Co	13,112
Hydromar Corp	173	Controls Co of America	439	TOTAL	107,688
Kaiser Aerospace & Electronics Co	2,936	EMC Instrumentation, Inc	73	66. American Mfg Co of Texas	106,745
Kaiser Jeep Corp	118,517	Friden, Inc	1,906	67. Massachusetts Institute of Technology	100,519
Kaiser Steel Corp	11,095	General Precision Equipment Corp	40	68. Gulf Oil Corp	86,443
National Steel & Shipbuilding Co	9,182	Graflex, Inc	1,060	Gulf General Atomic, Inc	5,883
TOTAL	142,398	HRB-Singer, Inc	7,749	Gulf Oil Trading Co	2,988
46. General Telephone & Electn Corp	25	National Theatre Supply Co	29	Industrial Asphalt, Inc	298
Automatic Electric Co	9,029	Singer General Precision, Inc.	91,822	Pittsburg Midway Coal Mining Co	330
Automatic Electric Sales Corp	200	Singer Sewing Machine Co	112	TOTAL	95,942
Fleetwood Corp	15	Strong Electric Corp	644	69. National Presto Industries, Inc	94,908
General Telephone & Electronic Lab	268	Tele-Signal Corp	9,099	70. Kidde Walter & Co, Inc	10,632
General Telephone Co Southeast	52	Vapor Corp	1,968	American Desk Mfg Co	72
General Telephone Directory Co	58	TOTAL	116,242	Associated Testing Labs, Inc	51
Hawaiian Telephone Co	8,026	59. Chamberlain Mfg Corp	115,925	Audio Equipment Co, Inc	565
Lenkurt Electric Co, Inc	9,556	60. Lear Siegler, Inc	83,650	Carpenter Mfg Co	56
Sylvania Electric Products, Inc	113,247	American Avitron	443	Chatos Glass Co	55
TOTAL	140,476	Astek Instrument Corp	11	Columbian Bronze Corp	246
47. Day & Zimmerman, Inc	137,793	L S I Service Corp	31,247	Craig Systems Corp	2,111
48. Texas Instruments, Inc	132,483	Lighting Products, Inc	33	Crane Hoist Engr Corp	185
49. Federal Cartridge Corp	131,901	National Broach & Machine Co	11	Dura Corp	116
50. Magnavox Co	126,245	Transport Dynamics, Inc	358	Fenwal, Inc	840
General Atronics Corp	4,003	TOTAL	115,753	Grove Mfg Co	845
Selmer (H & A), Inc	12	61. American Machine & Foundry Co	115,025	Harrington & Richardson, Inc	25,767
Sentinel, Inc	22	AMF Beard, Inc	27	United States Lines Co	50,380
TOTAL	130,282	AMF Tuboscope, Inc	82	TOTAL	91,921
51. Thiokol Chemical Corp	127,901	Cuno Engineering Corp	91	71. Signal Companies, Inc (The)	29
Delta Corp	65	Harley-Davidson Motor Co	41	Allison Steel Mfg Co	85
Uniplex, Inc	104	TOTAL	115,266	Dunham Bush, Inc	501
TOTAL	128,070	62. Colt Industries, Inc	7,866	Garrett Corp	72,698
		Chandler Evans, Inc	9,273	Mack Trucks, Inc	11,404
		Colts, Inc	84,792	Signal Oil & Gas Co	5,606
		Crucible Steel Corp	158	Southland Oil Corp	942
		Elox Corp	89	TOTAL	91,265
		Fairbanks Morse, Inc	5,596		
		Holley Carburetor Co	4,244		

72. Curtiss Wright Corp	90,680
Dorr-Oliver Corp	28
Marquette Metal Products Co	213
Metal Improvement Co	90
Zarkin Machine Co	160
TOTAL	91,171
73. Harvey Aluminum Inc	21,606
Harvey Aluminum Sales	68,852
TOTAL	90,458
74. States Marine Lines, Inc	87,059
75. Reynolds (RJ) Industries, Inc	18,474
Equipment, Inc	3,346
Gulf Puerto Rico Lines, Inc	384
Reynolds (RJ) Foods, Inc	456
Sea-Land Service, Inc	62,269
TOTAL	84,929
76. Aerospace Corp	76,245
77. Motorola Inc	73,061
Motorola Overseas Corp	103
TOTAL	73,164
78. Automation Industries, Inc	1,617
Consolidated American Services, Inc	550
Facilities Mgmt Corp	4,986
Spartan Aviation, Inc	3,157
Vitro Corp of America	62,892
TOTAL	73,112
79. Talley Industries, Inc	21,273
Braincon Corp	32
General Time Corp	50,665
Lakeville Precision Molding, Inc	38
Waterbury Button Co	77
Waterbury Companies, Inc	385
TOTAL	72,470
80. Harris-Intertype Corp	1,159
Gates Radio Co	371
PRD Electronics, Inc	39,393
R F Communications, Inc	3,516
Radiation, Inc	27,167
TOTAL	71,606
81. Firestone Tire & Rubber Co	66,640
Hamill Mfg Co	16
TOTAL	66,656
82. Seatrain Lines, Inc	41,906
Commodity Chartering Corp	3,169
Hudson Waterways Corp	15,822
Transeastern Shipping Corp	3,675
TOTAL	64,572
83. Aluminum Company of America	64,331
Rea Magnet Wire Co, Inc	109
Wear Ever Aluminum, Inc	18
TOTAL	64,458
84. Hughes Tool Co	63,693
85. National Gypsum Co	63,214
86. Hazeltine Corporation	60,472
Wheeler Laboratories, Inc	81
TOTAL	60,553
87. Western Union Telegraph Co	57,686
88. Control Data Corp	50,757
Associated Aero Science Labs, Inc	1,352

C E I R, Inc	541
Electronic Accounting Card Corp	894
Pacific Technical Analysts, Inc	3,293
T R G, Inc	76
TOTAL	56,913
89. White Motor Corp	25,056
Hercules Engines, Inc	30,751
Minneapolis Moline, Inc	465
Oliver Corp	12
TOTAL	56,284
90. Continental Air Lines, Inc	55,242
91. World Airways, Inc	54,930
92. Atlantic Richfield Co	31,347
Sinclair Koppers Co	13
Sinclair Oil Corp	8,387
Sinclair Refining Co	14,590
TOTAL	54,311
93. Tumpance Co, Inc	53,963
94. Cessna Aircraft Co	52,685
Aircraft Radio Corp	732
TOTAL	53,417
95. Smith Investment Co	
Smith A O Corp	51,567
Smith A O of Texas	134
TOTAL	51,701
96. Sverdrup & Parcel & Assocs, Inc	430
ARO, Inc	49,817
TOTAL	50,247
97. Dynallectron Corp	50,049
98. Letourneau R G, Inc	49,903
99. Flying Tiger Line, Inc	48,261
100. Southern Airways, Inc	48,260

FOOTNOTES

^a Net value of new procurement actions minus cancellations, termination and other credit transactions. The data include debit and credit procurement actions of \$10,000 or more, under military supply, service and construction contracts for work in the United States plus awards to listed companies and other U.S. companies for work overseas.

Procurement actions include definitive contracts, the obligated portions of letter contracts, purchase orders, job orders, task orders, delivery orders, and any other orders against existing contracts. The data do not include that part of indefinite quantity contracts that have not been translated into specific orders on business firms, nor do they include purchase commitments or pending cancellations that have not yet become mutually binding agreements between the Government and the company.

^b The assignment of subsidiaries to parent companies is based on stock ownership of 50 percent or more by the parent company, as indicated by data published in standard industrial reference sources. The company totals do not include contracts made by other U.S. Government agencies and financed with Defense Department funds, or contracts awarded in foreign nations through their respective governments. The company names and corporate structures are those in effect as of June 30, 1969, and for purposes of this report company names have been retained unless specific knowledge was available that a company had been merged into the parent or absorbed as a division with loss of company identity. Only those subsidiaries are shown for which procurement actions have been reported.

* Stock ownership is equally divided between Standard Oil Co. of California and Texaco, Inc.; half of the total of military awards is shown under each of the parent companies.

(N)—Non-profit.

(JV)—Joint venture of Raymond International, Inc; Morrison-Knudsen Co., Inc.; Brown & Root, Inc; and J. A. Jones Construction Co.

Lumber Procurement Management Realigned

Management and technical guidance of Armed Forces lumber procurement, a responsibility of the Defense Supply Agency (DSA), will be consolidated at the Portland, Ore., Wood Products Office, Defense Construction Supply Center. To be effective April 1, 1970, the consolidation will not alter procurement methods or lessen opportunities for suppliers, the DSA announcement said.

Lumber procurement functions are being realigned to reflect current procurement patterns, and to achieve more efficiency and economy of operation. About two-thirds of military softwood procurements are awarded to western suppliers. The relatively small hardwood requirements are supplied from the southeastern United States.

Currently lumber is procured by two offices, the Portland office and the Atlanta, Ga., Wood Products Purchasing Office.

In addition to being the principal procurement office, the Portland Wood Products Office will issue all written solicitations and will perform procurement support functions. The Atlanta office will receive solicitations for East Coast purchases for bid opening, abstracting and award. The Atlanta office also will make emergency buys from East Coast suppliers and act as DSA liaison in lumber matters.

Cold Region Lab Goes to Engineers

Command authority of the U.S. Army Terrestrial Sciences Center, Hanover, N.H., with the exception of the Photographic Interpretation Research Division, has been transferred from the Army Materiel Command to the Office of the Chief of Engineers.

Redesignated the Army Cold Regions Research and Engineering Laboratory, the center's mission was not changed.

Meeting Today's Logistical Challenge

The Army Materiel Command (AMC) has the herculean task of providing the U.S. Army modern weapons and equipment necessary for survival in combat operations.

This mission involves research and development, procurement and production, and supply and maintenance in the field. Today, thousands of scientists, engineers, and technicians are engaged in research and development activities conducted within the laboratories, arsenals, and testing installations of the command. Several thousands more are employed in activities within industry, higher educational institutions, and non-profit research foundations having Army contracts or grants.

Budget and expenditures of the command have averaged approximately \$15 billion each fiscal year since FY 1966. Budget programs scheduled for FY 1970 are:

- \$8.3 billion for PEMA (Procurement of Equipment and Missiles, Army).
- \$1.7 billion, Stock Fund.
- \$1.7 billion, OMA (Operation and Maintenance, Army).
- \$1.1 billion, RDT&E (Research, Development, Test and Evaluation).

AMC headquarters at Gravelly Point, Va., adjacent to Washington National Airport, provides the policy direction for the command's farflung operations. Nine major subordinate commands, located throughout the eastern half of the United States, serve as the "mid-management" level. There are seven commodity commands responsible for integrated commodity management of assigned categories of weapons, equipment and supplies; one test and evaluation command; and one logistics support command.

The actual execution of the Army's materiel program is accomplished by AMC's individual installations and activities, some reporting directly to the headquarters and others to major subordinate commands. They range from depots, laboratories, arsenals, schools, maintenance shops, test ranges, proving grounds, and procurement offices in the United States to customer assistance offices and logistics management offices throughout Europe and the Far East. There are 80 military installations and 100 activities in the AMC network.

The command is responsible for a materiel inventory of approximately \$21 billion, of which 50 percent is in depots or in transit and 50 percent is in the hands of troops. The magnitude of AMC's operation is illustrated by Army-sponsored cargo movements—surface and air—from the United States to Vietnam: around 7 million tons each fiscal year since July 1966. Last year AMC took more than 800,000 procurement actions which had a total value of slightly less than \$9.5 billion.

Organization and Mission

AMC was activated Aug. 1, 1962, as a part of the overall reorganization of the Army. This reorganization realigned the responsibilities of the Army General Staff. In addition, various operational responsibilities, previously carried out by the General Staff, were transferred to Army field commands, leaving the General Staff free to concentrate on planning.

The materiel functions of six of the Army's then seven technical services (Quartermaster, Ordnance, Chemical, Signal, Engineers, and Transportation) and many logistical functions of



General Ferdinand J. Chesaerek, USA, is Commander, U.S. Army Materiel Command. He was Assistant Vice Chief of Staff of the Army until March 1969. A graduate of the U.S. Military Academy, West Point, N.Y., he also holds a Master of Business Administration degree from Stanford University.

the General Staff were assigned to AMC. The Medical Corps was the only one of the seven technical services to retain its supply mission.

Before the Army's reorganization, each technical service was responsible for its personnel, doctrine, materiel and training. Now these responsibilities have been functionalized.

AMC has four basic missions:

- Performance of assigned materiel functions of the Department of the Army. These functions encompass research and development, product engineering, test and evaluation, procurement and production, inventory management, and maintenance. In addition, the command operates the continental U.S. wholesale supply and maintenance system which consists of storage and distribution, transportation, maintenance, and disposal of materiel.

- Provision of materiel and related service support to U.S. forces engaged in contingency operations, and support of foreign customers under the various international logistics agreements.

- Provision of worldwide technical and professional guidance and assistance to customers. This may involve sending a team to a command or foreign country to assist in deprocessing or in training recipients of new materiel; or sending special teams to assist customers in resolving maintenance, storage and distribution problems.

- Direction of assigned subordinate commands, installations and activities.

In June 1969, the organization of AMC headquarters was realigned to provide better control over assigned missions and functions, to reduce the span of control, and to achieve greater use of managerial talent.

Under the realigned AMC organization, its commander's span of control was reduced through the use of deputies with specific roles in specific areas. AMC now provides command and control over each of four major segments of operations: the laboratories, focusing on the scientific community; materiel acquisition, focusing on the industrial base; logistics support for the Army in the field; and management of resources, people, money and facilities.

The principal deputy serves as the commanding general's alter ego and

resources manager. He directs the activities of the comptroller, the director of personnel and training, and the director of installations and services.

New to the headquarters are two additional deputies—a deputy commanding general for materiel acquisition and a deputy commanding general for logistical support. The deputy for materiel acquisition centers his attention on the industrial base, with control of research and engineering, procurement and production, and materiel requirements. He also controls the U.S. Army Major Items Data Agency (USAMIDA), located at Letterkenny Army Depot, Chambersburg, Pa.

The deputy commanding general for logistics support is responsible for all aspects of customer service with the primary responsibility of responding to the needs of the command's worldwide requirements. He commands the 19 AMC depots.

The responsibilities of the deputy for laboratories were not affected by the reorganization. He continues to focus his interest on the scientific community and to direct the activities of the AMC in-house laboratories.

The positions of director of quality assurance and director for management information systems have been elevated. The latter, in his expanded role, is accelerating the development of automated management systems. He is expected to provide the command with key indicators and trends needed for sound management.

Also, under the realignment, the number of project managers has been reduced from 67 to 45 by assigning 12 projects to major subordinate commanders and by combining 10 projects with other project manager offices.

The span of control has been reduced about 60 percent through these actions. Instead of 190 commands, agencies and individuals reporting directly to the command group, there are now less than 80.

The headquarters operates with a staff of approximately 2,300 personnel, 360 military and 1,940 civilians. The coordinating staff consists of six major directorates: Maintenance; Materiel Requirements; International Logistics; Procurement and Production; Distribution and Transportation; and Research, Development and Engineering. Each has full re-

sponsibility for accomplishment of those AMC missions within its functional area. Five other major directorates—Comptroller and Director of Programs, Installations and Services, Personnel and Training, Quality Assurance, and Management Systems and Data Automation—perform coordinating and support functions.

Special staff elements include those normal to any major command headquarters, plus specific offices responsible for Operational Readiness, Logistics Data Management, and Combat Surveillance and Target Acquisition which perform functions unique to the materiel mission. Additionally, special assistants advise the commanding general in such specialized areas as science, engineering, labor relations and equal employment.

The headquarters also includes about a dozen project/product managers, together with staff officers representing the rest of the project/product managers located elsewhere in the command.

Also located at the headquarters, liaison officers represent various other U.S. military elements and those of Great Britain, Canada, and the Federal Republic of Germany.

Requirements and Procurement

Determination of materiel requirements is a complex procedure within AMC. Consideration must be given to authorized strength by component, war reserve requirements, estimation of consumption, and an estimation of assets in hand. Many of the basic item requirements are computed on an individual basis, using the factors of initial issue, replacement, pipeline, special operational projects and maintenance float. Initial issues are determined from tables indicating the number of items, by troop unit, which are authorized. The total is weighed against the DOD-approved Army force. Replacement encompasses a percentage of the initial allowance which is worn out or consumed. Projection of these data present management problems, particularly because peacetime and wartime replacement and consumption factors vary.

The pipeline is another computation factor which is based on intransit time and which varies by geographic area and by mode of transportation. Operational projects are determined

on the basis of the mission to be performed, are approved by the Department of the Army, and are indicated in a complete bill of materials.

The sum total of initial issue, replacement, pipeline, maintenance float and operational projects constitute the gross Army requirement for an item.

AMC is responsible for approximately 75 percent of the Army's total annual procurement dollars placed under contract. In addition, under the single department procurement policy of the Defense Department, AMC procures many items of ammunition, weapons and vehicles for all the Military Services. Seven of the nine major subordinate commands operate as buying centers, with each specializing in their particular commodity. The name of each command (Weapons, Missile, Tank-Automotive, Electronics, Munitions, Aviation Systems, and Mobility Equipment) indicates the commodity and related research and development with which each is concerned. These commands also give functional procurement support to project managers responsible for vertical management of major weapons acquisition.

Subordinate Commands

AMC's nine major subordinate commands make the complex operation work. Each is important to the overall program. The subordinate commands and their responsibilities are:

Army Electronics Command, Ft. Monmouth, N.J., (plus some elements at Philadelphia, Pa.) is responsible for integrated commodity management of tactical communications, avionics, radar, automatic data processing, meteorology, night vision, combat surveillance, target acquisition, navigation and electronic warfare equipments and systems, as well as test equipment and tactical power sources. The Electronics Command is composed of approximately 13,500 civilians and military personnel assigned to 25 locations throughout the world, including the Night Vision Laboratory at Ft. Belvoir, Va.; Aviation Electronics Agency, St. Louis, Mo.; Electronics Research and Development Agency, and Atmospheric Sciences Laboratory, White Sands Missile Range, N.M.; and Meteorological Support Activity and Atmospheric

Sciences Laboratory, Ft. Huachuca, Ariz.

Army Aviation Systems Command, St. Louis, Mo., is responsible for integrated commodity management of aircraft and aerial delivery equipment. The command is composed of 10,000 military and civilian personnel located at the St. Louis headquarters, the Aeronautical Depot Maintenance Center, Corpus Christi, Tex.; Aviation Materiel Laboratories, Ft. Eustis, Va.; Aviation Test Activity, Edwards AFB, Calif.; and various production plant activities. The command also directs aeronautical missions at Atlanta, Ga., New Cumberland, Pa., Red River, Tex., and Lathrop, Calif.

Army Missile Command Redstone Arsenal, Ala., is responsible for integrated commodity management of assigned rocket, missile, and related programs. The command is composed of 11,000 military and civilian personnel. Small liaison offices are maintained at missile facilities and industrial locations throughout the United States and overseas, but a majority of the command mission is accomplished at Redstone Arsenal. The command does not manufacture weapon systems

but maintains the scientific capability to monitor research, development, and production efforts of American industry.

Army Mobility Equipment Command St. Louis, Mo., is responsible for integrated materiel management of barriers and bridging, water purification equipment, construction equipment, power generators, materials and fuel handling equipment, industrial engines and turbines, environmental control equipment, and rail, marine, and amphibious equipment. The command is composed of 5,500 military and civilian personnel who are located at the St. Louis headquarters and the Army Mobility Equipment Research and Development Center, Ft. Belvoir, Va.; Marine Field Office, Hampton Roads, Va.; five mobility support offices throughout the United States and one each in Europe and the Pacific; and at five mobile railroad support shops in the United States.

Army Munitions Command, Picatinny Arsenal, Dover, N.J. is responsible for integrated commodity management of conventional, nuclear, chemical and biological munitions,

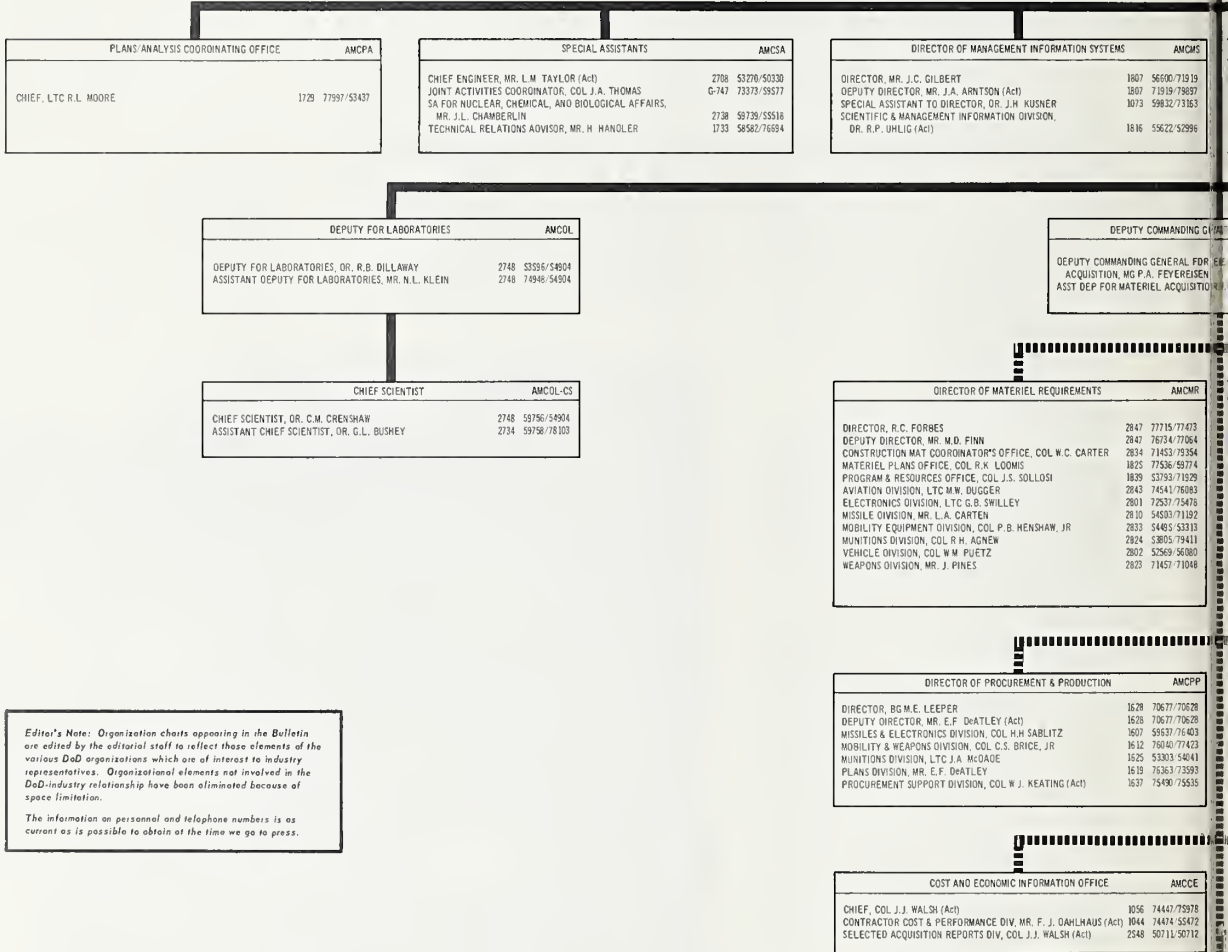


ASSISTANT GUNNER, PFC Bernard Covington of the 82nd Airborne Division, loads his AMC-procured 106mm recoilless rifle during combat operations in Vietnam.

HEADQUARTERS U.S. ARMY
WASHINGTON, D.C.

COMPTROLLER	AMCCP
COMPTROLLER, BG J. G. KALERGIS	2525 77897/77592
DEPUTY COMPTROLLER, MR. W.O. HARRIS	2525 77654/77552
ASST COMPTROLLER (Fin Mgt Sys), COL P. G. LAIRO	1509 70369/74003
ASST COMPTROLLER (Mgt Anal), COL P.L. DAL PONTE	G-513 50803/53781

COMMANDING GENERAL	GEN F. M. ...
DEPUTY COMMANDING GENERAL	LTG H. ...
CHIEF OF STAFF	MG L. B. ...
DEPUTY CHIEF OF STAFF	COL S. ...



Editor's Note: Organization charts appearing in the Bulletin are edited by the editorial staff to reflect those elements of the various DoD organizations which are of interest to industry representatives. Organizational elements not involved in the DoD-industry relationship have been eliminated because of space limitation.

The information on personnel and telephone numbers is as current as is possible to obtain at the time we go to press.

LEGEND

Office Function Mail Code

Position Name Bldg Number Extension

COMMAND 

COMMAND SUPERVISION 

MR. O O. TAYLOR

Y MATERIEL COMMAND

D. C. 20315

TELEPHONE: (202) OXford PLUS EXTENSION

ESAREK	1750	59154/59205	AMCCG
LEY	1742	59006/59571	AMDCG
ES	1742	59105/59107	AMCCS
ALGO	1741	59576/59574	AMDCS

GENERAL COUNSEL		AMCCG
GENERAL COUNSEL, MR. K.M. BARNES	2640	5208/52628
ADVERSARY PROCEEDINGS DIVISION, MR. J.T. DAUGHERTY	2637	59665/72289
PATENT LAW DIVISION, CH. MR. H.M. SARAGOVITZ	102	2015/20116
PROCUREMENT LAW DIVISION, MR. F.X. MCKENNA	2636	7487/52467

INFORMATION OFFICE		AMCIN
INFORMATION OFFICER, COL. J.H. DUBER	1067	76691/76824
ASSOCIATE INFORMATION OFFICER, MR. D. CRAIG	1062	76691/76824
INDUSTRY LIAISON, MR. J.J. FOLEY	1067	76515/59013
CLEARANCES, MISS G. HARRELL	1067	76515/59013

DIRECTOR OF QUALITY ASSURANCE		AMCQA
DIRECTOR, MR. S.J. LORBER	2441	77907/59155
DEPUTY DIRECTOR, MR. K.C. KRAUSE	2441	59157/59155
QUALITY ENGINEERING DIVISION, MR. A.H. NORDSTROM, JR.	2440	79966/78846
VALUE ENGINEERING DIVISION, MR. D.E. REDMON	2439	59152/74281
DEPT QUALITY DIVISION, MR. S. WILLIAMS, JR.	2441A	78660/50203
PRODUCT ACQUISITION DIVISION, MR. R.F. TINER	2433	71736/50201

PROJECT MANAGERS		AMCPM
CHAPARRAL/VULCAN, COL. R. DALY	Nassif	524 21763/21783
MAIN BATTLE TANK, MR. B.R. LUCZAK	2537	53724/50008
MALLARD, BG H.W. RICE (ECOM)	1724	70905/74824
LTC L.K. TATE (Mo)		
MOBILE ELECTRIC POWER, COL. J.J. ROCHEFORT, JR.	Dwyer	301 47006/47029
SEA NIGHT OPERATIONS, LTC C.R. LEHNER, JR.	Kel Tech	212 47588/751-2522
SPECIAL MISSION OPERATIONS, COL. D.U. ARMSTRONG	Nassif	307 29030/29042

MATERIEL ACQUISITION		AMCDMA
1847	55217/55283	
1847	55217/56098	

DEPUTY COMMANDING GENERAL FOR LOGISTICS SUPPORT		AMCDS
DEPUTY COMMANDING GENERAL FOR LOGISTICS SUPPORT		
MG W.N. REDLING	1942	54892/54554
ASST DEPUTY FOR LOGISTICS SUPPORT, MR. E. GREINER	1942	54746/54554

DIRECTOR OF RESEARCH, DEVELOPMENT & ENGINEERING		AMCRD
DIRECTOR, BG J.R. GUTHRIE	2744	74726/74847
DEPUTY DIR FOR OPERATIONS, BG W.E. GATES	2744	74847/74295
DEPUTY DIR FOR PLANS, DR. J.V. KAUFMAN	2748	74295/74615
AIR DEFENSE & MISSILES DIV, COL. H.L. DUNCAN	2705	78170/76571
AIR MOBILITY DIV, COL. H.L. JONES	2051	72040/56802
CHEMICAL BIOLOGICAL NUCLEAR DIV, COL. C.W. COOK	2068	70510/58124
COMMUNICATIONS ELECTRONICS DIV, MR. T.E. HEDMAN	2201	50107/50788
ENGINEERING DIV, COL. W.M. BOGGS	2071	74609/59377
FOREIGN DEVELOPMENTS DIV, LTC R.A. J. DYER	2046	53224/53348
GROUND MOBILITY DIV, COL. F.A. RICHTER	2058	71539/71326
INDIVIDUAL & GENERAL EQUIPMENT DIV, LTC C.S. HORN	2043	75513/71120
OTC OF EXEC AGENT FOR SAFEGUARD, MR. R. TAYLOR (Act)	1925	76037/76440
PROGRAM MANAGEMENT DIV, MR. W.W. FLYNN	2739	75883/76075
SCIENCE & TECHNOLOGY DIV, DR. H.M. EL-BISI	Nassif	232 22928/29089
TARGET ACQUISITION SYSTEMS OFFICE, COL. D.M. COPP	2072	54528/71474
WEAPONS DIV, COL. J.S. WOOD	2062	77096/53430

DIRECTOR OF INTERNATIONAL LOGISTICS		AMCIL
DIRECTOR, MR. M. AMOTH (Act)	2601	54500/73074
DEPUTY DIRECTOR, MR. M. AMOTH	2605	73074/54500
CO-PRODUCTION MGT OFFICE, LTC A.L. GOODALL	2625	71773/57567
SECONDARY ITEMS SUPPORT OFFICE, MR. BRUCE SMITH (Act)	2619	59159/79629
PLANS & PROCEDURES OFFICE, COL. M. GUSSE	2040	55273/70042
INTERNATIONAL DEVELOPMENT DIV, LTC L.E. WALTER	2054	79000/73371
FREE WORLD SUPPORT OFFICE, MR. A.T. HOLLAND (Act)	G-916	72570/72571
MILITARY SALES DIVISION, COL. H.J. GODFREY	2089	53822/76888

DIRECTOR OF MAINTENANCE		AMCOM
DIRECTOR, BG A.W. KOSTEAD	2941	59601/59602
DEPUTY DIRECTOR, MR. C.L. KARR (Act)	2941	59602/59603
AIRCRAFT DIVISION, LTC J.A. HAMMOND (Act)	2938	72226/77859
MISSILES & ELECTRONICS DIVISION, COL. L.R. HILLMAN	2908	56713/72935
PLANS & PROGRAMS OFFICE, MR. H.A. DRAUDT	2924A	59666/76105
SUPPORT DIVISION, MR. N.J. BUKOWSKI	2908	72935/56713
VEHICLES & EQUIPMENT DIVISION, COL. C.D. MABRY	2924	52463/73167
WEAPONS & MUNITIONS DIVISION, COL. R.W. MORDECAI	2936	73531/75316

DIRECTOR OF DISTRIBUTION & TRANSPORTATION		AMCDT
DIRECTOR, BG T. ANTONELLI	3085	50597/50595
DEPUTY DIRECTOR, COL. G. SERBOUSEK	1887	50596/50595
CATALOGING & SUPPLY DATA MGT DIV, COL. W.L. ROGERS	G-903	50791/54832
PLANS & PROGRAMS OFFICE, MR. R.W. DEW	1931	54808/75987
STOCK MGT & CONTROL DIVISION, MR. M.H. HINSON	1912A	78677/76425
STORAGE DIVISION, COL. J.M. DUPARC	1801	57609
TRANSPORTATION DIVISION, MR. W.W. DUKE	1893	52859/76425
TROOP SUPPORT DIVISION, COL. C.H. JOHNSTON	1814	50564/70773
WORLD-WIDE LOGISTICS MGT OFFICE, COL. J.D. FLORIO	2901	55521/54559
POST HOSTILITIES LOGISTICS OPERATIONS, LTC W.R. BRENT	1730	54482/54540

OPERATIONAL READINESS OFFICE		AMCOR
CHIEF, COL. W.B. DYER	G-941	50702/52542
ASST CHIEF, COL. A.M. FRAGALA	G-942	50702/52542
CUSTOMER ASSISTANCE DIVISION, COL. A.M. FRAGALA	G-936	52728/57229
LOGISTIC READINESS DIVISION, COL. W.R. MILLER	G-937	74678/76972
PLANS DIVISION, COL. V.C. RAMBERG (Act)	G-928	77572/76919
AMC OPERATIONS CENTER, LTC R.A. BOXELL	3822	59451/52808
SA TO THE CD FOR NATIONAL GUARD, LTC A.J. BUONAI	G-941A	77479/52719

SURVEILLANCE, TARGET ACQUISITION AND NIGHT OBSERVATION (STANO) SYSTEMS OFFICE		AMCSO
CHIEF, COL. J.E. HOUSEWORTH III	2085	71723/52222
SYSTEMS ENGINEERING COORDINATOR, MR. R.F. BRADY	2085	71723/52222
STANO PLANS COORDINATOR, LTC J.H. GORDON	2087	55540/56785
STANO PROGRAMS COORDINATOR, MR. C.V. CHASZAR	2087	56785/55540
STANO STUDIES COORDINATOR, MR. N.A. MOERMAN	2087	56785/55540
PROJECT MASTER COORDINATOR, LTC G.A. RIZOR, JR.	2087	55540/56785

S/A FOR PROJECT MANAGEMENT		AMCSA-PM
LTC R.L. BERQUIST	1727	72223/76768

INDUSTRIES		AMCOMAM
1719	74652/76373	

LIAISON

TO HEADQUARTERS, AMC		FROM HEADQUARTERS, AMC, TO:	
UNITED KINGDOM, LTC J.H.T. REYNOLDS		AFSC SPACE & MISSILES SYSTEMS DIV.*	823 1396
CANADA, LTC D.C. BADENOCH		MR. P. DINGARA	
MAJ J.E. AYERS		US ARMY FIELD OFFICE	
GERMANY, COL. G. VON SCHWEINITZ		HQ AF SYSTEMS COMMAND*	
MARINE CORPS, MAJ J.R. CUNL		MR. J. PROCTOR	851-3300, X3227/1450 Code 185-3227/1450
USAAW, MR. R.L. ROSS		INFANTRY CENTER, FT. BENNING, GA.	
USANB, MR. C.D. DILL		COL. R.H. ROBINSON	431-1410, X549-2052
		DOD PARACHUTE TESTING FACILITY*	
		CAPT J.C. DIMPINS	477-2011, X666/667
		MIT LINCOLN LABORATORY** (Boston Area)	
		MR. A.D. BECHROGAN	478-1001, X21-671
		US NAVAL WEAPONS CENTER*	
		MAJ G.N. KEY	898-1700, X7265, X72044
		SANJOA BASE*	
		COL. OHL	553-3220, X5516, X4822
		WRIGHT-PATTERSON AIR FORCE BASE*	
		MAJ C.N. PRICE	X52047

*BLOC T-7, GRAVELLY POINT, VA.

with emphasis on defensive aspects. The command is composed of 30,000 military and civilian personnel at 35 installations and activities. The Ammunition Procurement and Supply Agency, Joliet, Ill., procures conventional ammunition, primarily through more than 20 government-owned, contractor-operated Army ammunition plants. Ft. Detrick, Md., performs the command's responsibilities with regard to biological agents. Edgewood Arsenal, Md., performs the command responsibilities with regard to chemical munitions through Pine Bluff Arsenal, Ark., Rocky Mountain Arsenal, Denver, Colo., and other facilities.

Army Tank-Automotive Command, Detroit Arsenal, Warren Mich., is responsible for integrated commodity management of general purpose vehicles weighing more than 10,000 pounds, tactical vehicles, and assigned combat vehicles. The command also performs major support functions for certain combat vehicles assigned to the Army Weapons Command. The Tank-Automotive Command is composed of 6,800 military and civilian personnel, nearly all of whom work in the headquarters and in the shops and laboratories of the arsenal. It also administers a tank production plant at the arsenal and the Pontiac Storage Plant, Mich.

Army Weapons Command, Rock Island, Ill., is responsible for integrated commodity management of artillery and infantry weapons, gun-type armament for aircraft, fire control equipment for weapons, and vehicles for which the predominant requirement is firepower, *i.e.*, self-propelled artillery, tanks and tank-like vehicles including combat engineer vehicles and recovery vehicles. Additionally, the command is responsible for common type tools, equipment and sets used in Army maintenance shops. The command is composed of 12,000 military and civilian personnel who are located at the headquarters, at Rock Island Arsenal, and Watervliet Arsenal, N.Y.

Army Test and Evaluation Command, Aberdeen Proving Ground, Md., is responsible for engineering and service tests of Army materiel, test and evaluation support for the seven AMC commodity-type subordinate commands, and participation in preparation for troop tests conducted

by the U.S. Continental Army Command. The command is composed of 19,000 military and civilian personnel located at 15 installations and activities. These include White Sands Missile Range, N.M., Arctic Test Center, Alaska; Tropic Test Center, Canal Zone; Air Defense, Armor, Artillery, Aviation, Infantry and Airborne, Electronics and Special Warfare service test boards at major Army posts, and a coast-to-coast network of proving grounds, test activities and test centers. (See *Defense Industry Bulletin*, "Reliable Equipment for Arctic, Jungle, Desert," Sept. 1969, p.1.)

Army Safeguard Logistics Command, Huntsville, Ala., the newest AMC subordinate command, was established April 15, 1968, to provide logistical support to the Safeguard System, the antiballistic missile system. The command's responsibilities include all aspects of inventory management and maintenance engineering necessary to support the Safeguard System. Its present strength is 250 military and civilian personnel.

Distribution and Supply System

Distribution of most of AMC's materiel is based on the MILSTRIP standard supply system. The normal requisitioning chain overseas under MILSTRIP is from the using unit to a support unit which, in turn, requisitions the theater inventory control center. From the theater, requests flow directly to one of the sources of supply, *i.e.*, a National Inventory Control Point. Requisitioning procedures are similar in the United States.

In some situations, such as a critical shortage of repair parts overseas, the command has used special supply systems. For example, project "Red Ball Express," was established in 1965 when difficulty was experienced in keeping some major items of equipment operational in Vietnam. Under this system, the flow of requisitions moves from Vietnam directly to the National Inventory Control Point in the United States, and a single agency is responsible for filling the requisitions.

The receipt, storage, issue, and maintenance support for AMC's thousands of weapons, equipment, and supply items is accomplished by a

coast-to-coast system of 19 depots. The system fills an average of 500,000 individual requisitions a month from users of AMC material throughout the world.

These depots range from compact complexes of offices, warehouses, laboratories, and maintenance shops near urban centers to huge isolated installations with up to 90,000 acres of open storage. Most of the depots handle general supplies plus specific commodities, such as ammunition and vehicles. Some provide support to the Defense Supply Agency. The Fort Wingate Depot, Gallup, N.M., handles only ammunition. Although the primary purpose of the AMC depots is to store and issue materiel required for Army use, some 5 million tons of the 9 million tons of materiel currently stocked in these depots is stored for other agencies.

The command has 17 research and development laboratories or centers. Eleven of these are specialized laboratories which support the missions of the AMC subordinate commands. Most of the Army's in-house capability for basic and applied research is in the five laboratories and centers that report directly to AMC headquarters.

The center at Aberdeen, Md., conducts research that ranges from weapon systems evaluation and lubricants to human factors capabilities and nuclear weapons effects in areas of radiation and fallout. Basic research on metals, armor and ceramics is conducted at a center in Watertown, Mass. The Harry Diamond Laboratories in Washington, D.C., has research responsibilities that include target detection, weapon system synthesis and analysis. Research on food, clothing, footwear, aerial delivery and general equipment for the soldier is conducted at the Natick Laboratories, Natick, Mass. The Aeronautical Research Laboratory, Moffett Field, Calif., is interested in subsonic aerodynamics, wind tunnel operation and aeronautical resistance in low-spaced flights.

AMC's highly technical operations require professional development of its personnel. AMC operates three major logistics service schools for the Army.

The three AMC schools—Army Logistics Management Center, Ft. Lee, Va.; Army Management Engineering Training Agency, Rock Island, Ill.;

and the Joint Military Packaging Training Center, Aberdeen, Md.—are characterized by many relatively short courses. Directly administered by Headquarters, AMC, these schools train 10,000 students annually.

A number of “in-house” programs give training in specific commodity or functional fields. These include programs dealing with safety, quality assurance, metal tests and inspection, materiel deterioration and corrosion control, and ammunition inspection and surveillance.

The personnel of these schools also develop technical manuals, provide consultant services, and conduct specialized research.

AMC's BASIC MISSION is to keep the U.S. soldier equipped and supplied for whatever job he is called upon to perform.

Project Management

One of the most unusual programs AMC has is the “Project Manager System.” A modern look has been given to traditional military management in the guise of this system. AMC has made the most widespread application ever undertaken of the project/product manager concept.

An early analysis of AMC operations showed that a relatively small number of programs account for nearly 50 percent of the research and development expenditures and more than 50 percent of the production expenditures. These programs were given special management attention

by placing them under the project/product managership concept.

The criteria used to identify such weapon or equipment programs for project management include criticality of the weapon/equipment to the defense of the United States; urgency of getting the weapon/equipment into the hands of using units; complexity of the weapon/equipment requiring participation to an unusual degree of two or more major subordinate commands; and estimated high cost of a weapon/equipment.

The project manager directs the activities to be carried out and is the single individual with authority, responsibility and funds to accomplish his program objective. Currently 45 projects are under the single manager concept.

The past and future success of AMC, of course, is dependent to a great extent on its interface with civilian science and industry. The command has an extensive network of research and production facilities available in scientific, technical and productive areas, but it could not begin to accomplish its logistical mission without the massive support and participation of civilian business and industry.

Industry is advised of the Army's requirements through such AMC programs as advance planning briefings, qualitative requirements information, advance planning procurement information, and procurement fairs; through advertising in the official *Commerce Business Daily*, and through direct mailing of invitations for bid (IFB) and requests for proposal (RFP). Industry responds through the unsolicited proposals and company-funded study programs, as well as through answers to selected IFBs and RFPs.

AMC has five procurement offices: Chicago, Cincinnati, New York, San Francisco, and Los Angeles. Information concerning the preparation and submission of bids is readily available in these offices, as well as in the headquarters of the commodity commands. Officials are available at all AMC facilities for person-to-person interviews concerning future requirements and industry's capabilities for fulfilling them. An Army-Industry Liaison Office is maintained in the



Washington, D.C., headquarters. The subordinate commands and activities offer similar service to industry representatives.

The Army and AMC have come a long way since "Black Jack" Pershing used a tractor to move supply wagons during his expedition into Mexico; since mules packed ammunition and supplies to American troops in the mountains of Italy; since the old two-and-a-half ton truck bussed American troops and supplies around and over the cold, bleak hills of Korea. Today, in Vietnam, helicopters speed troops hundreds of miles across terrain impassable to wheeled vehicles. Soldiers arrive on the battlefield fresh for combat.

AMC's basic mission, of course is to keep its most important customer—the U.S. soldier—equipped and supplied for whatever job he is called upon to perform.

AMC strives to use the newest tools and principles of management to ensure the huge, complex administrative and service apparatus meshes with the production apparatus of the nation's economy with maximum efficiency.

Flexible Bulk Fuel Containers Tested by Army

Four elastomer-coated fabric bulk fuel tanks are under development by the Army Mobility and Equipment Research and Development Center, Fort Belvoir, Va. Field tests of the fuel reservoirs, with capacities of 1,250, 2,500, 5,000 and 25,000 barrels each, are being conducted by elements of the Test and Evaluation Command, Aberdeen Proving Ground, Md.

The tanks are intended for use in areas where temporary petroleum storage facilities are needed. The equipment is expected to reduce shipping requirements, construction time, and skilled manpower needs.

Estimated installation time for the large reservoir will be only 20 percent that required for conventional bolted or welded steel tankage of like capacity. The 6,200-pound envelope-like container is designed for installation by engineer construction troops. Operation of the completed tanks will be handled by petroleum-oil-lubricant unit quartermasters.

Small Business Share in FY 1969

Small Business Share of Defense Procurement

(Dollars in Thousands)

Type of Firm and Category of Procurement	Fiscal Year	
	1969	1968
	Jul 68-Jun 69	Jul 67-Jun 68
Defense Procurement (Prime Contracts) From All Business Firms—Total	\$37,986,280	\$40,304,066
Missile and Space Systems	5,238,625	4,732,136
Aircraft	8,316,897	9,470,027
Other Major Hard Goods	11,671,965	12,277,569
Services	2,934,176	3,234,257
Commercial Items, Construction and All Purchases under \$10,000	9,169,433	9,772,629
Civil Functions	655,184	817,448
Defense Procurement (Prime Contracts) From Small Business Firms—Total	\$6,765,378	7,583,890
Missile and Space Systems	94,211	91,498
Aircraft	242,603	264,463
Other Major Hard Goods	1,153,028	1,428,873
Services	658,294	840,843
Commercial Items, Construction and All Purchases Under \$10,000	4,367,395	4,642,416
Civil Functions	249,847	315,797
Percentage of Defense Prime Contract to Small Business Firms—Total	17.8	18.8
Missile and Space Systems	1.8	1.9
Aircraft	2.9	2.8
Other Major Hard Goods	9.9	11.6
Services	22.5	26.0
Commercial Items, Construction and All Purchases Under \$10,000	47.6	47.5
Civil Functions	38.1	38.6
Subcontracts		
Number of Reports from Large Business Firms	946*	886
Subcontract Commitments by Reporting Large Business Firms	\$14,902,354*	15,224,920
Commitments to Small Business Firms	6,043,176	6,495,762
Percent to Small Business	40.6	42.7

* Preliminary, Subject to Revision.

Table 1

Note: Statistics contained in Tables 1 and 2 were compiled by the Deputy Comptroller for Information Services, Office of the Secretary of Defense (Comptroller), Washington, D.C. 20301.

Defense Contracts, RDT&E

Small business firms were awarded \$6,765 million in defense prime contract awards during FY 1969, \$819 million less than the amount awarded during FY 1968. Of the total value of prime contract awards to business firms, small business received 17.8 percent during FY 1969 compared with 18.8 percent during FY 1968.

Contributing to the decline in the small business percentage was the rise in the dollar volume of missile and space systems and of ammunition (included in "Other Major Hard Goods"), which provide only limited opportunities for small business. This rise, in conjunction with decreased dollar volumes in commercial items, services and civil functions categories, which are favorable to small business, adversely affected the small business ratio. Additionally, small business obtained a smaller proportion of awards in the services category and in a number of sub-categories comprising the "Other Major Hard Goods" category.

Data on subcontract commitments to small business firms are shown in Table 1. Commitment data are obtained from large business firms which received prime contract awards of \$500,000 or more having substantial subcontracting possibilities. The reporting large business firms committed a total of \$14,902 million in subcontracts during FY 1969, of which \$6,043 million, or 40.6 percent went to small business firms. Subcontract commitments during FY 1968 were \$15,225 million, of which \$6,496 million, or 42.7 percent, went to small business firms.

Prime contract awards for research, development, test and evaluation (RDT&E) work are included in Table 1 and are shown separately in Table 2. Small business firms were awarded \$198 million in RDT&E prime contracts during FY 1969, an increase of \$2 million over FY 1968. Of the total RDT&E prime contracts awarded to business firms, small business received 3.7 percent during FY 1969, compared with 3.4 percent during FY 1968.

Procurement for Research, Development, Test and Evaluation (Dollars in Thousands)

Type of Firm and Department	Fiscal Year	
	1969	1968
	Jul 68-Jun 69	Jul 67-Jun 68
Total	\$5,320,090	\$5,777,965
Army	1,074,739	1,152,754
Navy	1,393,310	1,476,768
Air Force	2,852,041	3,148,443
Small Firms	197,583	195,602
Army	60,373	57,483
Navy	80,409	83,827
Air Force	56,801	54,292
Other Firms	5,122,507	5,582,363
Army	1,014,366	1,095,271
Navy	1,312,901	1,392,941
Air Force	2,795,240	3,094,151
Small Firms as a Percent of Total	3.7	3.4
Army	5.6	5.0
Navy	5.8	5.7
Air Force	2.0	1.7

Table 2

DOD Announces Actions To Reduce Military Activities

The Secretary of Defense has directed 280 specific actions to consolidate, reduce, realign, or discontinue military installations and activities in the United States and Puerto Rico. No major base closures are included.

When completed, these actions, together with 27 other actions overseas, will reduce expenditures approximately \$609 million annually. About 37,800 military and 27,000 civilian positions will be eliminated. This reduction is part of the FY 1970 defense expenditure cut of up to \$3 million announced earlier.

The services of the DOD Office of Economic Adjustment will be made

available to communities affected by the reductions.

Decisions involving overseas installations will not be announced until necessary consultations are completed with the host countries. Overseas reductions do not effect activities in Korea, Thailand, or Vietnam.

No bases in Europe are being closed and reductions in military personnel are insignificant. Decision has not been reached on the ultimate disposal of those installations in the United States and Puerto Rico which are to be closed as a result of the realignment actions.

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DOD Announces \$3 Billion Expenditure Cuts for FY 1970.....	6	Oct.
DOD Completes Plans for FY 1969 Expenditure Reductions.....	11	Feb.
Military Activities Realigned to Meet Budget Cuts.....	44	July

COMMUNICATIONS

Military Services Join in Test Effort to Meet Tactical Communications Needs.....	21	Jan.
New Terminal Equipment for AUTODIN Is in Advanced Test Phase.....	bk	June

CONSTRUCTION

Army Engineer Budget Reduced in FY 1970 Revision.....	29	July
DOD Asks \$2.4 Billion for FY 1970 Military Construction.....	24	April
2,000 New Family Housing Units Set for FY 1969.....	21	Jan.

CONTRACT ADMINISTRATION

DCAS Engineering to be Reorganized.....	40	June
DFSC To Use New Type Contracting for Buying Coal.....	44	July
VECPs Save \$84 Million in FY 1969.....	20	Nov.

ELECTRONICS

AF Develops Mobile Electronic Aircraft Scale..	28	Feb.
Army Foresees Electronic Surveying by 1975...	18	Aug.
DSA Will Procure Electronic Items for all Federal Agencies.....	22	Aug.
Electronics Aid Photomapping for Air Force...	23	Sept.

INDUSTRIAL SECURITY

Contractor Response to Questionnaires.....	22	Aug.
Contractor Retention of Classified Material....	20	Nov.
DSA Reports Cases of Laxity in Security Review Procedures.....	16	June
FY 1970 Industrial Management Course Dates Set.....	ib	Aug.

MANAGEMENT

Air Force Forecasts 1969 Computer Needs.....	ib	June
Army Extends Vertical Management to More Equipment Categories.....	19	Jan.
CDC Establishes Post-1975 Methodology for Army.....	29	Nov.
Congress to Get Progress Reports on Weapons Acquisition.....	23	Aug.
DESC Assumes DOD Management of Integrated Circuits.....	bk	June
DSA Will Procure Electronic Items for All Federal Agencies.....	22	Aug.

Title	Pg.	Mo.
GE Re-Entry Systems First to Meet New USAF Cost Control Program.....	12	June
Item Management in the Defense Supply Agency.....	20	Feb.
New Computerized Systems Being Placed in DSA Centers.....	bk	Dec.

ORGANIZATION

AFLC Reorganization Plan Announced.....	bk	Sept.
AF Logistics Command Realigns Jet Engine Management.....	bk	May
Airborne Warning Office Reorganized.....	21	Jan.
AFSC Realigns Conventional Munitions Centers.....	9	Dec.
AFSC Realigns F-15 Program.....	30	Sept.
Army Announces New R&D Labs at Belvoir...	18	June
Army Closing Five Nike Hercules Sites.....	44	July
Army Engineers Announces New R&D Office...	21	Aug.
Army Forms Small Arms Agency at Aberdeen, Md.....	25	April
Army Materiel Command Undergoing Reorganization.....	25	Aug.
Army Sets Up Task Force for Night Vision Devices.....	bk	Aug.
CDC Guides Army Computer Development...	bk	Oct.
Coast Guard Opens R&D Office.....	32	Feb.
Cold Region Lab Goes to Engineers.....	16	Dec.
Computer Management Activity Established by Army CDC.....	ib	June
DCS-Mallard Interface Task of Study Group...	bk	Nov.
DOD Announces Actions To Reduce Military Activities.....	25	Dec.
DSA Establishes Control Point for Quality Assurance to Service Foreign Buyers.....	bk	July
F-15 Logistic Management to Warner Robins AMA.....	ib	May
ILC Relocated.....	16	Oct.
MTMTS Centralizes Control of Personal Property Moving.....	29	Feb.
New AFSC Unit to Support Bare Base Concept...	20	Jan.
New Army Computer Unit Set Up in Hawaii...	4	Nov.
Ramey AFB Site of New SOFNET Solar Observatory.....	bk	April
Transfer of CIFE.....	ib	Oct.
Tri-Service Office to Standardize Equipment for Fire Fighting.....	18	June
Two STRATCOM Units Merge.....	33	Nov.
USACS Establishes Two Support Groups.....	28	Sept.
USAF 666A Office Moved.....	6	Oct.

OCEANOGRAPHY

Navy Studies Submersibles for Ocean Floor Surveys.....	30	Feb.
Research Sub to Conduct Gulf Stream Study...	3	Feb.

PROCUREMENT

Air Force Awards FX Radar Contracts.....	32	Jan.
Army Awards TOW Production Contract.....	52	March
Army Seeks Modular Construction Equipment...	bk	Feb.
Army To Get Electronic Teletypewriters.....	27	Nov.

Army Unveils New Air Target System.....	30	Sept.
Contract for F-14 Awarded by Navy.....	52	March
Cooling Unit Type Classified for Production...	53	May
DSA Reports FY 1969 Activities.....	ib	Oct.
F-15 Engine Definition Contracts Awarded....	24	April
Fleet Ships To Use New Fuel.....	41	July
Lockheed Awarded Navy S-3A Contract.....	ib	Oct.
Lumber Procurement Management Realigned...	16	Dec.
Navy Lets Contracts for New LHA Ships.....	ib	July
New Ceilometer Developed for USAF Combat Weathermen.....	bk	Oct.
Production Contract Awarded for New Jet Fuel Starter.....	bk	Feb.
Second Source TOW Contract Awarded.....	25	April
Surface Effects Ship Contract Awarded.....	52	March

PUBLICATIONS

DOD Instructions and Directives Available Through Subscription.....	40	June
Navy RDT&E Guide Available.....	20	Nov.
New Subscription Service Offered by Commerce Department.....	16	June
Revised Edition of ITAR Available.....	20	Nov.

RESEARCH AND DEVELOPMENT

AF Test New Thermoelectric Air Conditioners...	32	Feb.
Aircraft Vibration Target of Air Force Study...	bk	Aug.
Air Force Begins Field Tests of Air Mobile Bases.....	bk	Nov.
Air Force Develops Television Reconnaissance Viewfinder System.....	bk	Dec.
Air Force Tries New Ideas in V/STOL Wind Tunnel.....	ib	May
Air Force Works on Miniature Pilot TV Targeting Display.....	bk	May
Air-Ground Casualty Recovery Aim of Army...	6	Oct.
Army Awards Study Contracts for New Rocket System.....	25	April
Army Calls for "Waterwings" for Combat Troops.....	bk	July
Army Developing Larger CONEX Units.....	12	June
Army Engineers Seek Improved Landing Mats...	28	Feb.
Army Engineers Test Plastic Sealed Roads...	30	Sept.
Army Expands R&D Role of Corps of Engineers...	39	July
Army Exploring New Laser Uses.....	ib	Sept.
Army Investigating Liquid Natural Gas as Turbine Fuel.....	42	July
Army Proposes New Artillery.....	9	Dec.
Army Seeking Fire-Fighting Helos.....	ib	June
Army Seeks Aviation Fire-Proofing Aids.....	48	May
Army Seeks Flying Gas Tank.....	17	Nov.
Army Seeks Helo Rearing Vehicle.....	12	June
Army Seeks Ideas for Future Missiles.....	bk	April
Army Seeks Safer Fuels.....	18	Aug.
Army Sets Up Task Force for Night Vision Devices.....	bk	Aug.
Army Studies M551 Vehicle for New Light Armor Battalions.....	32	Feb.
Army Studies New Cargo Air-Drop System....	52	May
Army Testing Detachable Tire Treads.....	6	Dec.
Asbestos Fibers Studied for Aircraft Structures...	ib	Aug.

Title	Pg.	Mo.	Title	Pg.	Mo.
Flexible Bulk Fuel Containers Tested by Army	24	Dec.	New Earth Movers Goal of Army Engineers	ib	Sept.
First Flight Test for Beryllium Rudder	32	Jan.	New Test for Solid Propellant Rockets	24	Jan.
Free-Drop Food Containers Sought by Army	ib	Sept.	Nuclear Explosion Simulator Operational at Kirtland AFB	23	April
Gamma-Ray Device Studied To Simulate Bullet Penetration	13	Aug.	Portable Psy-War Audio Visual Gear Army Goal	28	Oct.
Holloman AFB Testing Four New Missiles	19	May	Research Sub to Conduct Gulf Stream Study	3	Feb.
Improved Windshields Sought by Army	24	Oct.	Space Probes to Study Arctic Radio Blackout	19	May
Launch Complex 30 at Cape Goes to Navy	ib	April	Stoppable Rotor Concept of USAF Study	24	April
Marines, Army Propose Mini-Transceivers	bk	Sept.	Unmanned Cargo Planes Planned for Army	9	Dec.
MERDC Testing New Structural System	33	Nov.	U.S. and U.K. to Combine Fuel Cell Research	bk	Jan.
Mobile Missile Trackers Sought by Army	ib	Dec.			
Modified Wind Tunnel Improves USAF Jet Test Capability	4	Jan.			
Modular Combat Radio Proposed by Army	16	Nov.			
Navy-Air Force Investigate Pilot Rescue System	48	May			
Navy Engineers Study Undersea Windows	28	Feb.			
Navy Studies Submersibles for Ocean Floor Surveys	30	Feb.			
Navy's New Gunpowder Reduces Weapon Wear	ib	July			
Navy Tests New Lightweight 5-Inch Gun	ib	May			

SHIPS

Navy Given Go-Ahead on "Quiet" Submarine Program	bk	Jan.
Navy Lets Contracts for New LHA Ships	ib	July
Navy To Charter Nine New Tankers	9	April
Navy To Retire 19 Ships	27	June

SMALL BUSINESS

Army Display To Aid Labor Surplus Areas	40	May
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DOD To Acquire New Family of Computer Systems

The Defense Department has approved plans to acquire a new family of standardized computer systems for use in the World-Wide Military Command and Control System (WWMCCS), and associated portions of the Intelligence Data Handling System (IDHS).

Under the program, authorization has been given for 34 new computing systems, with an option for 53 additional computers. The Air Force Electronics Systems Division (ESD), L. G. Hanscom Field, Mass., will be responsible for procurement, with responsibility for machine allocation and software development going to the Joint Chiefs of Staff.

The procurement represents the first phase of a standardization program that began with desirability and feasibility studies in 1966 by the Joint Chiefs of Staff and the Military Departments. Specifications were then drawn up by a joint working group. Plans allow the development of additional specifications to accommodate future advances in computer technology, to precede the next buy expected in 1972.

The procurement represents the first time the computing needs of

many users will be satisfied by systems acquired from a single source. Individual requirements of the separate activities will be accommodated by providing configurations of the central processing unit and peripheral equipment tailored to the needs of the user.

The WWMCCS and IDHS includes 55 activities utilizing 131 computer systems.

Advantages of a standard family of computers include improved data interchange and data distribution, less duplication in the development of applications and support programs, lower unit costs, elimination of time and money costs involved in individual selections, better utilization and performance of computers, and reduced logistical and training costs.

Features of the software program include multi-programming capability for all computer systems, multi-processing for the large computers, on-line data files with multi-level security, and compilers for Fortran, Cobal and Jovial, the standard high order programming languages.

Not provided for are inclusions of communications processors, display consoles, or optical readers.

FAAS-85 Study Proposes Future Army Aircraft

The Army Combat Developments Command, Fort Belvoir, Va., has completed its Family of Army Aircraft Study 1970-1985 (FAAS-85). It proposes a family of aircraft with sub-families to support the basic combat functions of firepower, mobility, service support, intelligence, and command and control.

The master plan also proposes concept formulation, developmental and phase-in schedules to give a year-by-year picture of current and future aircraft through the next 15 years.

Included in the overall consideration are the Utility Tactical Transport Aircraft System (UTTAS), the Heavy Lift Helicopter (HLH), the Very Heavy Lift Helicopter (VHLH), a variety of short take-off and landing (STOL) aircraft, manned or drone surveillance, target acquisition and intelligence aircraft, the follow-on Huey Cobra, and the Tactical Assault Supply Transporter (TAST).

FAAS-85 was initiated as the focal point for future studies and efforts defining and evaluating doctrine, organization and materiel requirements for Army aviation through 1985.

Status of Funds Quarterly Report

Outlays

Fourth Quarter, Fiscal Year 1969

(Thousands of Dollars)

Department of Defense	Outlays				Unpaid obligations	
	April 1969	May 1969	June 1969	Cum thru 30 June 1969	At start of year	As of 30 June 1969
Military Personnel						
Active forces	1,728,744	1,720,375	1,971,523	20,481,815	761,917	592,306
Reserve forces	60,797	66,703	94,929	891,761	149,746	152,294
Retired pay	213,151	213,967	215,302	2,444,071	6,880	6,354
Undistributed	108,205	55,192	4,620	—	—	—
Total—Military Personnel	2,110,897	2,056,238	2,286,373	23,817,647	918,543	750,955
Operation and Maintenance	1,926,578	1,850,962	2,440,750	22,227,060	4,033,198	3,924,991
Procurement						
Aircraft	768,034	707,253	674,341	9,179,088	9,591,226	7,740,256
Missiles	213,187	214,555	280,082	2,509,100	2,069,735	2,534,668
Ships	178,508	175,829	174,787	1,948,758	3,447,418	3,085,253
Tracked combat vehicles	52,660	27,564	65,982	484,151	610,190	454,414
Ordnance, vehicles and related equipment	532,315	619,320	928,597	6,623,440	6,595,367	5,705,929
Electronics and communications	129,607	78,168	167,701	1,411,816	1,881,334	1,667,653
Other procurement	177,992	141,493	155,462	1,833,647	2,056,183	2,031,665
Undistributed	—43,509	—42,715	—290,963	—2,410	—7,225	—4,815
Total—Procurement	2,008,796	1,921,470	2,155,987	23,987,590	26,244,228	23,215,023
Research, Development, Test, & Evaluation						
Military sciences	86,390	80,087	94,937	982,948	777,774	716,768
Aircraft	44,533	123,073	176,492	1,026,896	717,451	687,974
Missiles	200,813	213,142	211,546	2,317,535	983,018	1,085,044
Astronautics	100,957	110,574	56,516	1,155,627	487,480	20,412
Ships	26,480	40,009	28,806	329,481	245,279	290,845
Ordnance, vehicles and related equipment	30,268	35,421	33,915	336,322	216,577	668,182
Other equipment	66,243	73,375	82,106	783,468	478,981	509,562
Program-wide management and support	29,661	25,352	31,684	525,943	189,338	282,937
Undistributed	—12,717	—15,143	15,362	—993	—1,633	—640
Total—Research, Development, Test, & Evaluation	572,625	685,891	731,364	7,457,226	4,094,265	4,261,084
Military Construction	153,877	36,413	148,626	1,388,656	1,784,255	1,806,093
Family Housing	53,643	50,242	59,475	573,376	174,687	256,946
Civil Defense	6,773	6,999	6,125	86,887	80,629	55,255
Other—Special Foreign Currency Program	300	43	143	1,289	1,071	363
Revolving and Management Funds	—139,171	—120,136	—554,928	—1,535,160	6,078,411	6,615,240
Subtotal—Military Functions-Federal Funds	6,694,318	6,488,121	7,273,916	78,004,572	43,409,287	40,885,950
Military Assistance—Federal Funds	52,218	78,386	147,578	685,541	1,823,034	1,562,839
Grand Total—Federal Funds	6,746,536	6,566,507	7,421,493	78,690,112	45,232,322	42,448,788
Total—Military Functions-Bud. Concept adj.	—12,342	—8,044	—9,801	—126,171	8,794	4,534
Total—Mil. Assistance-Bud. Concept adj.	—8,129	—27,465	—11,761	103,319	433,454	227,015
Grand Total—Budget Concept adjustments	—20,471	—35,509	—21,562	—22,852	442,248	231,549
TOTAL—DEPARTMENT OF DEFENSE	6,726,066	6,530,998	7,399,931	78,667,260	45,674,570	45,680,337

Department of the Army						
Military Personnel						
Active forces	725,402	704,414	916,446	8,460,678	382,077	213,798
Reserve forces	36,329	41,002	63,994	586,709	112,578	115,658
Undistributed	87,896	53,141	37,146	—	—	—
Total—Military Personnel	849,627	798,557	1,017,586	9,047,387	494,654	329,457
Operations and Maintenance	717,599	672,057	995,139	8,299,710	1,541,708	1,337,348
Procurement						
Aircraft	93,108	89,252	109,278	1,128,169	1,343,518	1,066,700
Missiles	58,811	44,652	87,175	593,355	629,712	856,168
Tracked combat vehicles	50,974	26,041	64,349	465,061	586,046	431,068
Ordnance, vehicles, and related equipment	212,414	280,642	361,084	2,914,395	3,445,481	2,972,083
Electronics and communications	48,767	16,468	84,025	490,148	688,774	588,599
Other procurement	58,346	47,967	48,046	528,023	769,510	692,824
Undistributed	2,606	—33,894	—323,722	—2,410	—7,225	—4,815
Total—Procurement	525,027	471,129	430,234	6,116,741	7,455,816	6,612,627
Research, Development, Test, and Evaluation						
Military sciences	21,610	11,118	11,639	126,091	98,272	98,697
Aircraft	4,572	7,440	10,573	98,597	78,199	91,757
Missiles	61,037	74,800	76,793	692,981	386,366	423,738
Astronautics	349	1,243	1,281	9,485	7,865	3,999
Ordnance, vehicles, and related equipment	13,520	13,961	18,166	166,556	110,532	116,864
Other equipment	23,210	27,471	44,524	343,944	196,748	201,122
Program-wide management and support	5,211	5,421	9,848	84,179	33,898	32,294
Undistributed	—15,283	—17,741	—10,152	—993	—1,633	—640
Total—Research, Development, Test, & Evaluation	114,226	123,713	162,672	1,520,840	910,247	967,831
Military Construction	82,057	—19,502	34,679	460,209	768,046	776,104
Revolving and Management Funds	—2,892	—12,771	—306,139	—347,902	1,955,905	1,856,891
Army—Federal Funds	2,285,644	2,033,185	2,334,168	25,096,984	13,126,377	11,880,257
Army—Budget Concept adjustments	—7,170	—2,144	—5,377	—61,792	10	89
TOTAL—DEPARTMENT OF THE ARMY	2,278,475	2,031,041	2,328,790	25,035,191	13,126,387	11,880,346

Department of the Navy	Outlays				Unpaid obligations	
	April 1969	May 1969	June 1969	Cum thru 30 June 1969	At start of year	As of 30 June 1969
Military Personnel						
Active forces	507,255	529,418	569,814	5,990,704	225,093	168,734
Reserve forces	12,639	13,445	15,789	152,792	22,898	23,320
Undistributed	21,057	1,952	-32,698	—	—	—
Total—Military Personnel	540,951	544,815	552,905	6,143,496	247,991	192,054
Operation and Maintenance	480,979	472,507	655,711	5,757,299	1,466,352	1,537,613
Procurement						
Aircraft	233,693	260,579	240,804	2,821,054	3,218,049	2,897,891
Missiles	50,707	48,144	60,586	534,165	547,934	713,622
Ships	178,508	175,829	174,787	1,948,758	3,447,418	3,085,253
Tracked combat vehicles	1,686	1,523	1,633	19,090	24,144	23,346
Ordnance, vehicles, and related equipment	144,532	183,357	291,778	1,828,471	1,713,934	1,544,437
Electronics and communications	50,197	33,846	48,552	517,409	645,301	590,275
Other procurement	92,057	78,575	82,364	853,665	1,143,225	1,198,318
Undistributed	-51,652	7	19,931	—	—	—
Total—Procurement	699,729	781,859	920,435	8,522,612	10,740,005	10,053,142
Research, Development, Test, and Evaluation						
Military sciences	17,497	15,254	18,737	195,450	121,458	130,580
Aircraft	30,937	43,946	64,947	386,337	257,524	257,544
Missiles	54,024	51,156	45,904	653,101	258,025	292,722
Astronautics	1,873	1,702	2,457	21,393	16,259	16,413
Ships	26,480	40,009	28,806	329,481	245,279	290,845
Ordnance, vehicles and related equipment	16,748	21,460	15,749	169,766	106,045	114,328
Other equipment	9,781	11,517	12,589	126,750	79,604	78,238
Program-wide management and support	2,331	-10,442	1,732	163,201	133,064	219,718
Undistributed	4,553	1,158	-8,923	—	—	—
Total—Research, Development, Test, & Evaluation	164,224	175,760	181,998	2,045,479	1,217,258	1,400,388
Military Construction	37,275	13,682	68,495	424,838	573,575	616,207
Revolving and Management Funds	-76,116	-30,422	-135,368	-350,083	2,269,078	2,199,935
Navy—Federal Funds	1,846,041	1,958,202	2,244,176	22,543,641	16,514,258	15,999,338
Navy—Budget Concept adjustments	-2,390	-4,879	-2,136	-36,153	110	122
TOTAL—DEPARTMENT OF THE NAVY	1,843,651	1,953,322	2,242,041	22,507,488	16,514,368	15,999,460

Department of the Air Force

Military Personnel						
Active forces	496,087	486,543	485,263	6,030,433	154,747	209,774
Reserve forces	11,829	12,256	15,146	152,260	14,270	13,316
Undistributed	-748	99	172	—	—	—
Total—Military Personnel	507,168	498,898	500,581	6,182,693	169,017	223,090
Operation and Maintenance	633,833	613,975	691,128	7,073,158	927,881	953,240
Procurement						
Aircraft	441,233	357,422	324,259	5,229,865	5,029,659	3,775,665
Missiles	103,669	121,759	132,321	1,381,580	892,089	964,878
Ordnance, vehicles, and related equipment	175,355	155,294	275,671	1,877,439	1,434,835	1,189,270
Electronics and communications	29,460	27,258	34,476	395,452	539,008	471,403
Other procurement	24,711	8,233	16,193	409,459	100,001	97,074
Undistributed	578	-2,639	13,476	—	—	—
Total—Procurement	775,007	667,329	796,395	9,293,795	7,995,592	6,498,290
Research, Development, Test, & Evaluation						
Military sciences	9,241	12,904	14,967	156,020	104,162	92,294
Aircraft	9,024	71,687	100,972	541,962	381,728	338,673
Missiles	85,752	87,186	88,849	971,453	338,627	368,584
Astronautics	98,735	107,629	52,778	1,124,749	463,356	436,990
Other equipment	33,252	34,387	24,993	312,774	202,629	230,202
Program-wide management and support	22,119	30,373	20,104	278,563	22,376	30,925
Undistributed	-1,987	1,440	34,437	—	—	—
Total—Research, Development, Test, & Evaluation	256,134	345,605	337,102	3,385,521	1,512,878	1,497,668
Military Construction	35,059	40,822	45,196	493,544	425,858	393,810
Revolving and Management Funds	-14,000	-40,658	-37,617	-507,948	521,170	1,276,941
Air Force—Federal Funds	2,193,200	2,125,973	2,332,785	25,920,764	11,552,396	10,843,039
Air Force—Budget Concept adjustments	-2,780	-1,017	-2,523	-28,443	8,675	4,323
TOTAL—DEPARTMENT OF THE AIR FORCE	2,190,420	2,124,956	2,330,262	25,892,321	11,561,071	10,847,362

Defense Agencies/Office of the Secretary of Defense

	Outlays				Unpaid obligations	
	April 1969	May 1969	June 1969	Cum thru 30 June 1969	At start of year	As of 30 June 1969
Military Personnel						
Retired Pay	213,151	213,967	215,302	2,444,071	6,880	6,354
Operations and Maintenance	94,167	92,423	98,771	1,096,892	97,258	96,790
Procurement						
Ordnance, vehicles, and related equipment	14	27	64	3,135	1,117	139
Electronics and communications	1,183	596	648	8,807	8,251	7,376
Other procurement	2,878	6,718	8,859	42,500	43,447	43,449
Undistributed	4,959	-6,189	-648	—	—	—
Total—Procurement	9,034	1,152	8,923	54,442	52,815	50,964
Research, Development, Test, & Evaluation						
Military sciences	38,042	40,811	49,594	505,387	453,882	395,197
Military Construction	486	1,411	257	10,066	16,777	19,972
Family Housing	53,643	50,242	59,475	573,376	174,687	256,946
Other—Special Foreign Currency Program	300	43	143	1,289	1,071	363
Revolving and Management Funds	-46,162	-36,286	-75,804	-329,227	1,332,258	1,281,474
Defense Agencies—Federal Funds	362,661	363,762	356,661	4,356,296	2,135,628	2,108,061
Defense Agencies—Budget Concept adjustments	-4	-2	235	218	—	—
TOTAL—DEFENSE AGENCIES	362,657	363,760	356,896	4,356,514	2,135,628	2,108,061

Office of Civil Defense

Civil Defense	6,773	6,999	6,125	86,887	80,629	55,255
Revolving and Management Funds	—	—	—	—	—	—
TOTAL—OFFICE OF CIVIL DEFENSE-FED. FUNDS	6,773	6,999	6,125	86,887	80,629	55,255

Military Assistance

Military Personnel	38	14	30	280	353	117
Operation and Maintenance	19,802	50,394	36,435	284,154	230,840	270,006
Procurement						
Aircraft	8,957	10,420	17,462	109,303	226,880	159,225
Missiles	643	319	-3,372	2,345	16,035	8,779
Ships	1,143	1,357	6,043	24,091	43,984	78,612
Ordnance, vehicles, and related equipment	9,552	9,989	20,492	134,389	192,738	144,030
Electronics and communications	2,333	4,300	8,905	59,435	101,235	79,415
Other procurement	3,497	5,320	7,616	45,515	88,420	76,051
Total—Procurement	26,125	31,705	57,147	375,078	669,292	546,110
Research, Development, Test, & Evaluation	—	—	—	10	35	40
Military Construction	307	2	219	2,082	6,809	4,749
Revolving Fund	1,162	28,402	26,813	51,341	848,233	736,295
Undistributed	4,785	-32,132	26,934	-27,404	67,472	5,522
Subtotal—Military Assistance	52,218	78,386	147,578	685,541	1,823,034	1,562,839
Total—Military Assistance-Bud. Concept adjustments	-8,129	-27,465	-11,761	103,319	433,454	227,015
TOTAL—MILITARY ASSISTANCE	44,089	50,921	135,817	788,860	2,256,488	1,789,854

Obligations

Department of Defense

	Available for Obligation	Obligations				Unobligated balance 30 June 1969
		April 1969	May 1969	June 1969	Cum thru 30 June 1969	
Military Personnel						
Active forces	20,699,455	1,691,999	1,722,490	1,768,616	20,693,058	6,397
Reserve forces	935,312	66,521	81,436	121,574	899,176	36,136
Retired pay	2,450,000	212,952	213,797	214,611	2,442,941	7,059
Total—Military Personnel	24,084,767	1,971,473	2,017,723	2,104,803	24,035,176	49,591
Operation and Maintenance	24,719,988	2,075,121	1,863,040	2,659,279	24,604,650	115,338
Procurement						
Aircraft	11,255,494	450,152	308,131	1,327,994	7,770,553	3,484,941
Missiles	4,131,858	213,211	212,104	341,703	3,093,224	1,038,634
Ships	3,629,245	99,843	148,680	176,533	1,665,620	1,963,625
Tracked combat vehicles	486,156	16,508	28,825	81,839	393,308	92,847
Ordnance, vehicles, and related equipment	9,793,106	405,999	243,563	488,801	7,772,690	2,020,416
Electronics and communications	2,395,381	91,719	152,688	276,402	1,359,793	1,035,588
Other procurement	3,241,186	150,595	170,344	393,532	2,373,261	867,925
Undistributed	503,292	—	—	—	—	503,292
Total—Procurement	35,435,716	1,428,035	1,264,331	3,086,803	24,428,449	11,007,267
Research, Development, Test & Evaluation						
Military sciences	1,142,580	69,805	70,906	155,825	1,004,606	137,974
Aircraft	1,172,893	39,937	150,013	103,238	1,000,792	172,101
Missiles	2,702,607	164,878	118,402	185,992	2,551,234	151,373
Astronautics	1,282,062	56,442	77,368	67,863	1,221,009	61,053
Ships	468,317	18,281	23,367	47,839	404,160	64,157
Ordnance, vehicles, and related equipment	419,666	10,404	19,004	40,936	355,840	63,826
Other equipment	1,047,805	87,469	60,994	112,004	842,403	205,402
Program-wide management and support	1,065,465	71,347	57,334	160,711	1,021,741	43,724
Emergency Fund	—	—	—	—	—	—
Undistributed	48,914	—	—	—	—	48,914
Total—Research, Development, Test & Evaluation	9,350,309	518,563	577,390	874,405	8,401,785	948,524
Military Construction	3,499,621	155,191	172,685	258,704	1,929,213	1,570,408
Family Housing	746,433	56,147	28,063	62,170	674,091	72,423
Civil Defense	69,205	2,215	4,084	9,580	64,353	4,852
Other	15,742	22	111	37	580	15,162
Subtotal—Military Functions	97,921,781	6,206,765	5,927,427	9,055,782	84,138,296	13,783,485
Military Assistance	682,061	21,455	117,636	138,187	620,631	61,430
TOTAL—DEPARTMENT OF DEFENSE	98,603,842	6,228,220	6,045,063	9,193,969	84,758,927	13,844,915

Department of the Army	Available for Obligation	Obligations				Unobligated balance 30 June 1969
		April 1969	May 1969	June 1969	Cum thru 30 June 1969	
Military Personnel						
Active forces	8,519,997	705,217	709,818	757,317	8,519,997	—
Reserve forces	609,584	42,206	55,211	87,607	589,501	20,083
Total—Military Personnel	9,129,581	747,423	765,028	844,925	9,109,498	20,083
Operation and Maintenance	9,241,195	728,467	809,638	1,118,843	9,191,301	49,895
Procurement						
Aircraft	1,207,303	103,370	49,273	180,632	875,405	331,898
Missiles	1,065,269	31,543	43,731	70,646	906,765	158,504
Tracked combat vehicles	457,334	14,132	27,254	79,913	375,017	82,317
Ordnance, vehicles and related equipment	5,821,354	212,061	127,612	294,749	4,471,874	1,349,480
Electronics and communications	948,494	30,215	27,717	136,196	487,929	460,565
Other procurement	888,171	43,854	65,828	159,556	533,914	354,257
Undistributed	105,053	—	—	—	—	105,053
Total—Procurement	10,492,978	435,175	341,415	921,692	7,650,904	2,842,074
Research, Development, Test, & Evaluation						
Military sciences	198,123	10,411	10,894	21,515	175,273	22,850
Aircraft	168,271	5,693	5,378	16,182	114,869	53,402
Missiles	795,956	39,209	22,207	56,154	738,376	57,580
Astronautics	11,851	355	473	1,000	5,694	6,157
Ordnance, vehicles and related equipment	223,697	7,547	12,390	26,116	177,418	46,279
Other equipment	497,002	27,107	33,627	48,910	366,503	130,499
Program-wide management and support	99,340	6,645	5,334	8,673	88,950	10,390
Undistributed	10,634	—	—	—	—	10,634
Total—Research, Development, Test & Evaluation	2,004,874	96,967	90,303	178,550	1,667,083	337,791
Military Construction	1,483,312	73,188	46,069	122,284	712,805	770,506
TOTAL—DEPARTMENT OF THE ARMY	32,351,941	2,081,221	2,052,451	3,186,295	28,331,591	4,020,350

Department of the Navy

Military Personnel						
Active forces	6,041,427	509,203	519,476	524,810	6,041,427	—
Reserve forces	165,798	11,694	13,589	16,828	156,969	8,829
Total—Military Personnel	6,207,225	520,897	533,065	541,638	6,198,396	8,829
Operation and Maintenance	6,736,287	613,051	422,545	763,008	6,720,351	15,936
Procurement						
Aircraft	3,430,516	101,050	186,762	314,073	2,550,627	879,889
Missiles	979,347	21,619	41,604	72,548	720,828	258,519
Ships	3,629,245	99,843	148,680	176,533	1,665,620	1,963,625
Tracked combat vehicles	28,822	2,376	1,571	1,927	18,292	10,530
Ordnance, vehicles and related equipment	2,050,552	93,839	90,597	91,961	1,666,783	383,769
Electronics and communications	731,837	39,729	78,190	62,565	474,676	257,161
Other procurement	1,780,702	77,718	73,729	194,990	1,377,478	403,224
Undistributed	142,494	—	—	—	—	142,494
Total—Procurement	12,773,513	436,178	621,128	914,596	8,474,302	4,299,210
Research, Development, Test, & Evaluation						
Military sciences	220,035	9,401	8,875	26,030	214,165	5,870
Aircraft	447,091	20,198	32,423	26,437	386,531	60,560
Missiles	789,256	28,710	33,820	49,276	719,243	70,013
Astronautics	22,874	667	1,898	2,140	21,727	1,147
Ships	468,317	18,281	23,367	47,839	404,160	64,157
Ordnance, vehicles and related equipment	195,969	2,857	6,614	14,820	178,422	17,547
Other equipment	147,208	9,184	2,184	13,477	128,635	18,573
Program-wide management and support	675,721	43,758	30,640	129,396	645,141	30,580
Undistributed	3,698	—	—	—	—	3,698
Total—Research, Development, Test, & Evaluation	2,970,169	133,056	139,822	309,414	2,698,024	272,145
Military Construction	1,339,980	44,612	73,916	67,069	740,427	599,553
TOTAL—DEPARTMENT OF THE NAVY	30,027,174	1,747,794	1,790,475	2,595,726	24,831,500	5,195,673

Department of the Air Force	Available for Obligation	Obligations				Unobligated balance 30 June 1969
		April 1969	May 1969	June 1969	Cum thru 30 June 1969	
Military Personnel						
Active forces	6,138,031	477,579	493,196	486,490	6,131,634	6,397
Reserve forces	159,930	12,621	12,636	17,139	152,706	7,224
Total—Military Personnel	6,297,961	490,199	505,833	503,629	6,284,340	13,620
Operation and Maintenance	7,588,980	632,540	539,584	674,314	7,551,591	37,389
Procurement						
Aircraft	6,617,675	245,732	72,096	833,289	4,344,521	2,273,154
Missiles	2,087,242	160,049	126,769	198,509	1,465,631	621,611
Ships	—	—	—	—	—	—
Ordnance, vehicles and related equipment	1,918,337	100,109	25,345	102,046	1,631,876	286,461
Electronics and communications	705,053	18,605	46,720	76,401	389,256	315,797
Other procurement	477,883	27,796	17,438	27,216	406,567	71,316
Undistributed	230,747	—	—	—	—	230,747
Total—Procurement	12,036,937	552,295	288,469	1,237,460	8,237,852	3,799,085
Research, Development, Test, & Evaluation						
Military sciences	185,075	9,427	8,065	18,005	162,606	22,469
Aircraft	557,531	14,046	112,212	60,619	499,392	58,139
Missiles	1,117,395	96,958	62,376	80,562	1,093,615	23,780
Astronautics	1,247,337	55,420	74,997	64,723	1,193,588	53,749
Other equipment	403,595	51,178	25,183	49,617	347,265	56,330
Program-wide management and support	290,404	20,944	21,360	22,642	287,650	2,754
Undistributed	34,582	—	—	—	—	34,582
Total—Research, Development, Test & Evaluation	3,835,919	247,973	304,195	296,166	3,584,116	251,803
Military Construction	622,176	35,029	52,243	65,387	462,719	159,458
TOTAL—DEPARTMENT OF THE AIR FORCE	30,381,972	1,958,038	1,690,322	2,776,956	26,120,618	4,261,355

Defense Agencies/Office of the Secretary of Defense

Military Personnel						
Retired Pay	2,450,000	212,952	213,797	214,611	2,442,941	7,059
Operation and Maintenance	1,153,526	101,063	91,274	103,114	1,141,408	12,119
Procurement						
Ordnance, vehicles and related equipment	2,863	—10	9	45	2,157	706
Electronics and communications	9,997	3,170	61	1,240	7,932	2,065
Other procurement	94,430	1,227	13,249	11,770	55,302	39,128
Undistributed	24,998	—	—	—	—	24,998
Total—Procurement	132,288	4,387	13,320	13,054	65,391	66,897
Research, Development, Test, & Evaluation						
Military sciences	539,347	40,566	43,072	90,275	452,562	86,785
Emergency Fund	—	—	—	—	—	—
Undistributed	—	—	—	—	—	—
Total—Research, Development, Test, & Evaluation	539,347	40,566	43,072	90,275	452,562	86,785
Military Construction	54,153	2,362	457	3,964	13,262	40,891
Family Housing	746,433	56,147	28,063	62,170	674,091	72,342
Other	15,742	22	111	37	580	15,162
TOTAL—DEFENSE AGENCIES/OSD	5,091,489	417,498	390,095	487,225	4,790,235	301,254

Office of Civil Defense

Civil Defense	69,205	2,216	4,084	9,580	64,353	4,852
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Military Assistance

Military Personnel	90	—13	2	22	90	—
Operation and Maintenance	520,092	17,398	104,623	124,910	458,661	61,431
Procurement						
Aircraft	38,301	1,177	—1,539	—2,770	38,301	—
Missiles	—4,715	—35	862	5,504	—4,715	—
Ships	15,652	2,026	—88	4,800	15,652	—
Ordnance, vehicles and related equipment	67,471	—1,762	9,981	9,390	67,471	—
Electronics and communications	25,182	553	1,157	2,306	25,182	—
Other procurement	20,184	2,118	2,646	4,709	20,184	—
Total—Procurement	162,075	4,077	13,019	12,931	162,075	—
Research, Development, Test, & Evaluation	—36	—9	—	—	—36	—
Military Construction	71	—	—	538	71	—
Undistributed	—230	2	—9	—215	—230	—
TOTAL—MILITARY ASSISTANCE	682,061	21,455	117,636	138,187	620,631	61,431

NOTE: All outlay amounts are on a net Treasury basis (gross payments less reimbursement collections), whereas obligations and unpaid obligations are on a gross basis (inclusive of reimbursable activity performed by components of DOD for each other). Therefore, unpaid obligations as of the end of the reporting month cannot be computed from other figures in this report.

Prepared by:
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Office of Assistant Secretary of Defense (Comptroller)
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DEFENSE PROCUREMENT

Contracts of \$1,000,000 and over awarded during the month of October 1969:

DEFENSE SUPPLY AGENCY

- 2—Rubber Fabricators, Inc., Grantsville, W.Va. \$2,046,855. 304,920 pneumatic nylon mattresses. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0632.
- 3—Athey Products Corp., Raleigh, N.C. \$1,637,777. 85 rough terrain diesel fork lift trucks. Wake Forest, N.C. Defense General Supply Center, Richmond, Va. DSA 400-70-C-1563.
- 9—Trenton Textile Engineering and Manufacturing Co., Inc., Trenton, N.J. \$1,053,713. 145,600 coated wet weather nylon twill parkas. Trenton and Dover, Del. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0673.
- 20—Standard Oil Co. of Calif., Western Operations, Inc., San Francisco, Calif. \$4,904,995. Fuel oil and gasoline for installations in the Southwest. Defense Fuel Supply Center, Alexandria, Va. DSA 600-70-D-0341.
- Glenn's All American Sportswear, Inc., Amory, Miss. \$1,130,049. 446,660 pairs of men's polyester and wool tropical trousers. Sulligent, Ala., and Hatley, Miss. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0722.
- 23—Sicard Industries, Inc., Watertown, N.J. \$1,101,370. Snow blast sweepers. Defense Construction Supply Center, Columbus, Ohio. DSA 700-70-C-8457.
- 24—DeRossi and Son Co., Vineland, N.J. \$2,631,640. 146,040 men's tropical polyester/wool coats for the Air Force. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0735.
- Marcie Dale, Inc., Atlantic City, N.J. \$2,130,933. 133,350 men's wool serge Marine Corps coats. Philadelphia, Pa. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0773.
- Glenn's All American Sportswear, Inc., Amory, Miss. \$1,451,279. 1,210,460 pairs of men's cotton sateen trousers for the Army. Guntown and Amory, Miss., and Detroit, Ala. Defense Personnel Support Center, Philadelphia, Pa. DSA-100-70-C-0768.
- 27—General Foods Corp., White Plains, N.Y. \$1,807,512. 3,045,000 units (900 grams) of instant rice. Dover, Del. Defense Personnel Support Center, Philadelphia, Pa. DSA 130-70-C-0036.
- Uncle Ben's, Inc., Houston, Tex. \$1,645,117. 3,055,000 units of instant rice. Defense Personnel Support Center, Philadelphia, Pa. DSA 130-70-C-0037.
- 28—Rubber Fabricators, Inc., Grantsville, W.Va. \$1,507,558. 225,160 pneumatic nylon mattresses. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0632.
- 29—Bibb Manufacturing Co., Macon, Ga. \$1,947,390. 417,000 linear yards of Army nylon twill cloth. Macon and Columbus, Ga., and Salisbury, N.C. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0817.

- 30—Nantex-Riviera Corp., New York, N.Y. \$1,454,724. 3,442,320 pairs of men's cotton drawers. Greenwood, S.C. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-70-C-0828.
- 31—Burlington Industries, Inc., New York, N.Y. \$3,406,320. 912,000 linear yards of wool gabardine. Army Green. Raeford, N.C., and Halifax and Clarksville, Va. Defense Personnel Support Center, Philadelphia, Pa. DSA-100-70-C-0784.



DEPARTMENT OF THE ARMY

- 1—Martin Marietta Corp., Orlando, Fla. \$14,720,131. FY 1970 industrial engineering services for the Pershing missile system. Army Missile Command, Huntsville, Ala. DA-AH01-70-C-0216.
- Cessna Aircraft Co., Wichita, Kan. \$2,240,000. High time maintenance and modernization of O-1A to O-1G aircraft. Army Aviation Systems Command, St. Louis, Mo. DA-23-204-AMC-04365 (T).
- 2—Wilkinson Manufacturing Co., Fort Calhoun, Neb. \$2,119,838. Metal parts for M52A5 fuzes (81mm mortar projectiles). Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0094.
- REDM Corp., Wayne, N.J. \$1,740,778. Metal parts for 81mm mortar projectiles. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0095.
- Bulova Watch Co., Valley Stream, N.J. \$2,101,540. Metal parts for 81mm mortar projectiles. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0100.
- McAdoo White Co., Inc., Riverside, Calif. \$1,555,597. Restoration of 36 miles of the White Water River channel. Riverside County, Calif. Army Engineer District, Los Angeles, Calif. DA-CW09-70-C-0029.
- 3—Philco-Ford Corp., Newport Beach, Calif. \$1,215,000. FY 1970 Chaparral research and development program. Army Missile Command, Huntsville, Ala. DA-AH01-70-C-0311.
- Healy Tibbitts Construction Co., Honolulu, Hawaii. \$1,046,542. Phase one rehabilitation of the Armed Forces Rest and Rehabilitation Center, Fort DeRussy, Honolulu. Army Engineer District, Honolulu, Hawaii. DA-CA83-70-C-0006.
- Chamberlain Corp., Elmhurst, Ill. \$9,027,098 (contract modification). Production facilities for 155mm and 175mm projectile metal parts. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-36-034-AMC-0163 (A).
- 6—National Presto Industries, Eau Claire, Wis. \$3,315,025 (contract modification). Metal parts for 8-inch projectiles, M106. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-69-C-0109.
- Fischback and Moore International Corp., SA, Dallas, Tex. \$2,990,000. Construction of an electric power plant addition, Miraflores Power Plant, Fort Clayton, Canal Zone, Panama. Army Engineer District, Jacksonville, Fla. DA-CA70-70-C-0008.
- U.S. Steel Corp., Pittsburgh, Pa. \$1,584,600 (contract modification). Metal parts for 8-inch projectiles, M106. Berwick, Pa. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-69-C-0226.
- 9—Insley Manufacturing Co., Indianapolis, Ind. \$4,239,877. 20-ton commercial cranes, plus shovel fronts. Army Mobility Equipment Command, St. Louis, Mo. DA-AK01-70-C-1994.
- Talley Industries, Inc., Mesa, Ariz. \$1,260,000. Metal parts for 4.2 inch illuminating projectiles. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0086.
- 10—Martin Marietta Corp., Orlando, Fla. \$5,766,000. Pershing missile component and power station research and development. Army Missile Command, Redstone Arsenal, Huntsville, Ala. DA-AH01-70-C-0282.
- General Motors Corp., Indianapolis, Ind. \$1,480,000 (contract modification). M109 155mm self-propelled howitzers. Cleveland, Ohio. Army Weapons Command, Rock Island Arsenal, Ill. DA-11-199-AMC-00610 (W).
- The Frankford Arsenal, Philadelphia, Pa., awarded the following contracts:
- Remington Arms Co., Inc., Bridgeport, Conn. \$12,456,225. 7.62mm NATO cartridges. DA-AA25-70-C-0174. \$5,605,000. 5.56mm ball cartridges. DA-AA25-70-C-0171.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$5,602,150. 5.56mm ball cartridges. DA-AA25-70-C-0162.
- Federal Cartridge Corp., Anoka, Minn. \$3,984,750. 5.56mm ball cartridges. DA-AA25-70-C-0161.
- Wells Marine, Costa Mesa, Calif. \$2,745,300. M13 7.62mm machine gun belt links. DA-AA25-70-C-0177.
- Jackes-Evans Manufacturing Co., St. Louis, Mo. \$2,736,000. 7.62mm machine gun belt links. DA-AA25-70-C-0176.
- Barry L. Miller Engineering, Hawthorne, Calif. \$1,372,500. 7.62mm machine gun belt links. DA-AA25-70-C-0176.
- George K. Garret Co., Philadelphia, Pa. \$1,359,000. 7.62mm machine gun belt links. DA-AA25-70-C-0179.
- The Army Ammunition Procurement and Supply Agency, Joliet, Ill., issued the following contracts:
- Amron Corp., Waukesha, Wis. \$3,557,338. 40mm cartridge cases. Waukesha and Antigo, Wis. DA-AA09-70-C-0128.
- AVCO Corp., Richmond, Ind. \$1,718,795. Metal parts for 40mm projectiles. DA-AA09-70-C-0121.
- General Time Corp., La Salle, Ill. \$2,871,000. Metal parts for 2.75 inch rocket point detonating fuzes. DA-AA09-70-C-0064.
- Bulova Watch Co., Jackson Heights, N.Y. \$2,547,353. Metal parts for 2.75 inch rocket point detonating fuzes. Woodside, N.Y. DA-AA09-70-C-0065.
- C-0107.
- AVCO Corp., Richmond, Ind. \$1,344,600. Metal parts for 2.75 inch rocket point detonating fuzes. DA-AA09-70-C-0107.
- 14—General Motors Corp., Detroit, Mich. \$4,232,906. Diesel engines for the M113 vehicle family. Army Tank Automotive Command, Warren, Mich. DA-AE07-70-C-0012.
- Medico Industries, Inc., Wilkes Barre, Pa. \$2,415,000. Metal parts for high explosive warheads. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0133.
- Chamberlain Manufacturing Corp., Waterloo, Iowa. \$1,283,100. Metal parts for high explosive warheads. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0134.
- 15—Sylvania Electric Products, Inc., Mountain View, Calif. \$3,066,680 (contract modification). Classified. Army Mobility Equipment Research and Development Center, Fort Belvoir, Va. DA-AK02-68-C-0210.
- 16—Western Electric Co., New York, N.Y. \$3,399,500 (contract modification). Research and development on the Spartan missile and the Perimeter Acquisition Radar. McDonnell Douglas Corp., Santa Monica, Calif., General Electric Co., Syracuse, N.Y., and other subcontractors. DA-30-069-AMC-00333 (Y). \$8,882,730

CONTRACT LEGEND

Contract information is listed in the following sequence: Date—Company — Value — Material or Work to be Performed—Location of Work Performed (if other than company plant) — Contracting Agency—Contract Number.

- (contract modification). Additional hardware for the Perimeter Acquisition Radar. Greensboro, N.C., Bell Telephone Labs, Whippany, N.J. and Lockheed Electronics, Los Angeles, Calif. DA-30-069-AMC-00333(Y). Safeguard System Command, Huntsville, Ala.
- Northrop Corp., Anaheim, Calif. \$1,830,000. WDU4A/A warheads. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0132.
- 17—Amron Corp., Waukesha, Wis. \$1,094,800. 20mm brass cartridge cases. Frankford Arsenal, Philadelphia, Pa. DA-AA25-69-C-0202.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$2,594,400. 60mm illuminating projectiles. Marion, Ill. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0150.
- AVCO Corp., Stratford, Conn. \$1,277,611. T-53 turbine engine nozzles. AF-41608-69-A-2421. \$2,774,188. T-53 modification kits. AF-41608-69-A-2421. Army Aviation Systems Command, St. Louis, Mo.
- Firestone Tire and Rubber Co., Akron, Ohio. \$1,954,742. T-107 recovery vehicle track shoe assemblies. Noblesville, Ind. Army Tank Automotive Command, St. Louis, Mo. DA-AE07-70-C-1651.
- Goodyear Tire and Rubber Co., Akron, Ohio. \$1,058,681. T-132E1 self-propelled howitzer track shoe assemblies. St. Mary's, Ohio. Army Tank Automotive Command, St. Louis, Mo. DA-AE07-70-C-1978.
- Ralph M. Parsons Co., Los Angeles, Calif. \$3,673,818 (contract modification). Architectural engineering services for preparation of a standard design for the Missile Site Radar site. Army Engineer Division, Huntsville, Ala. DA-CA87-68-C-0001.
- Ammann and Whitney, New York, N.Y. \$1,412,113 (contract modification). Architectural engineering services for preparation of a standard design for the Perimeter Acquisition Radar site. Army Engineer Division, Huntsville, Ala. DA-CA87-68-C-0011.
- 20—Kaiser Jeep Corp., Toledo, Ohio. \$118,011,183. 2½-ton M44 series trucks. South Bend, Ind. Project Manager, General Purpose Vehicles, Warren, Mich. DA-AE06-70-C-0001.
- Hercules Engines, Inc., Canton, Ohio. \$37,472,224. LD 465-1C multifuel engines for the 2½-ton truck program, plus spares. Army Tank Automotive Center, Warren, Mich. DA-AE07-70-C-1220.
- General Dynamics Corp., Pomona, Calif. \$11,081,522. Redeye missile warheads. Army Missile Command, Redstone Arsenal, Huntsville, Ala. DA-AH01-70-C-0120.
- AVCO Corp., Charleston, S.C. \$4,650,000 (contract modification). Overhaul and/or repair of T-53 L13/13A turbine engines. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-69-A-00308.
- S.J. Groves and Sons, Charleston, W.Va. \$3,751,704. Relocation of W.Va. highway 37, East Lynn Lake Project. Army Engineer District, Huntington, W.Va. DA-CW69-70-C-0017.
- Ford Motor Co., Highland Park, Mich. \$2,784,033. M151A1 ¼-ton utility trucks. Project Manager, General Purpose Vehicles, Warren, Mich. DA-AE06-70-C-0003.
- Sanders Associates, Bedford, Mass. \$1,175,183. AN/TTQ-34 prototype radar systems. Harry Diamond Laboratories, Washington, D.C. DA-AG39-69-C-0043.
- 21—Olin Mathieson Chemical Corp., East Alton, Ill. \$26,068,420 (contract modification). Artillery and small arms ammunition propellants. Baraboo, Wis. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-69-C-0014.
- Littton Systems Corp., Woodland Hills, Calif. \$2,000,000. Test equipment for AN/ASN-86 inertial navigation systems. Army Electronics Command, Fort Monmouth, N.J. DA-AB07-68-C-0345.
- The Picatinny Arsenal, Dover, N.J. awarded the following contracts for metal parts for 2.75 inch rocket motor fin and nozzle assemblies.
- Jackson Products Co., Tampa, Fla. \$3,372,000. DA-AA21-70-C-0213.
- Muncie Gear Works, Muncie, Ind. \$5,191,902. DA-AA21-70-C-0212.
- HIPCO, Denver, Colo. \$5,077,500. DA-AA21-70-C-0211.
- The Marquardt Co., Ogden, Utah. \$4,851,000. Clearfield, Utah. DA-AA21-70-C-0210.
- 22—Bell Aerospace Corp., Fort Worth, Tex. \$3,665,524. Drive shaft assemblies for UH-1 helicopters. Hurst, Tex. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-69-A-0314.
- 24—Computer Sciences Corp., Huntsville, Ala. \$1,169,979. Programming and maintenance of the Safeguard Management Information System. Safeguard System Command, Huntsville, Ala. DA-HC60-70-C-0034.
- 27—Sylvania Electric Products, Inc., Mountain View, Calif. \$1,535,200. Research and development work in electronic warfare. Procurement Division, Army Electronics Command, Fort Monmouth, N.J. DA-AB07-68-A-0503.
- International Telephone and Telegraph Corp., Nutley, N.J. \$3,939,960 (contract modification). Module sets for AN/GRC-144 radio set operating spares. Procurement Division, Army Electronics Command, Philadelphia, Pa. DA-AB05-68-C-0027.
- 28—The Army Ammunition Procurement and Supply Agency, Joliet, Ill. awarded the following contracts:
- Norris Industries, Inc., Los Angeles, Calif. \$2,760,411. 105mm cartridge cases. Riverbank Army Ammunition Plant, Riverbank, Calif. DA-AA09-70-C-0167.
- Norris Industries, Inc., Brockton, Mass. \$2,866,498 (contract modification). 66mm rocket launchers. DA-AA09-69-C-0085.
- Maxson Electronics Corp., Macon, Ga. \$1,617,000. 60mm illuminating projectile assemblies. DA-AA09-70-C-0165.
- ACF Industries, Inc., St. Louis, Mo. \$2,640,460. Body assemblies for M525 mortar fuzes. DA-AA09-70-C-0149.
- Olin Corp., East Alton, Ill. \$1,378,569. Loading, assembling and packing M84A1 time fuzes. Marion, Ill. DA-AA09-70-C-0162.
- 29—The Army Ammunition Procurement and Supply Agency, Joliet, Ill. issued the following contracts.
- Honeywell, Inc., Hopkins, Minn. \$1,460,494 (contract modification). PDM 551 fuzes. New Brighton, Minn. DA-AA09-70-C-0104.
- Pace Corp., Memphis, Tenn. \$1,276,411 (contract modification). White Star parachute signals. Camden, Ark., and Memphis, Da-AA21-69-C-0519.
- National Presto Industries, Eau Claire, Wis. \$1,430,675 (contract modification). Metal parts for 8-inch high explosive projectiles. DA-AA09-69-C-0101.
- General Motors Corp., Indianapolis, Ind. \$2,908,800. T-63-A-700 engines for OH-58A helicopters. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-70-C-0329.
- 30—The Army Ammunition Procurement and Supply Agency, Joliet, Ill. issued the following contracts:
- Day and Zimmerman, Inc., Philadelphia, Pa. \$4,792,262 (contract modification). Loading, assembling and packing ammunition, and operation of Lone Star Army Ammunition Plant, Texarkana, Tex. DA-11-173-AMC-00114(A).
- Sperry Rand Corp., New York, N.Y. \$14,850,915 (contract modification). Loading, assembling and packing ammunition. Army Ammunition Plant, Shreveport, La. DA-11-173-AMC-00080(A).
- Thiokol Chemical Corp., Bristol, Pa. \$10,713,389 (contract modification). Loading, assembling and packing artillery ammunition. Longhorn Army Ammunition Plant, Marshall, Tex. DA-11-173-AMC-00200(A).
- Action Manufacturing Co., Philadelphia, Pa. \$1,242,800. Metal parts for rocket fuzes. DA-AA09-70-C-0178.
- Ordnance Products, Inc., North East, Md. \$1,304,948. Hand grenade fuzes. DA-AA09-70-C-0169.
- Hall Construction Co., Inc., Little Silver, N.J. \$2,063,352. Construction of 100 family housing units, Fort Monmouth, N.J. Army Engineer District, New York, N.Y. DA-CA51-70-C-0029.
- Bell Helicopter Co., Fort Worth, Tex. \$16,489,330 (contract modification). UH-1H helicopters. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-69-C-0028.
- 31—Dow Chemical Co., Midland, Mich. \$2,678,000. Nose assemblies for M126 bombs. Madison, Ill. Edgewood Arsenal, Md. DA-AA15-70-C-0191.
- Ordnance Products, Inc., North East, Md. \$4,481,585. M18 colored smoke hand grenades. Edgewood Arsenal, Md. DA-AA15-70-C-0110.
- E.I. Dupont de Nemours Co., Wilmington, Del. \$1,323,600 (contract modification). TNT. Army Ammunition Plant, Newport, Ind. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-68-C-0414.
- National Presto Industries, Eau Claire, Wis. \$2,373,290 (contract modification). Metal parts for 105mm high explosive projectiles. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-69-C-0028.
- S. Tepper and Sons, Inc., Deer Park, N.Y. \$1,118,558. Metal parts for high-explosive warheads. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-70-C-0176.
- ITT Corp., Nutley, N.J. \$1,368,578 (contract modification). Engineering a change to AN/TRC-144 radio sets. Clifton, N.J. Procurement Division, Army Electronics Command, Philadelphia, Pa. DA-AB05-68-C-0027.
- RCA, Burlington, Mass. \$5,324,227. FY 1970 engineering services for the Land Combat Support System. DA-AH01-70-C-0333. \$10,442,248. Land Combat Support System hardware. Army Missile Command, Huntsville, Ala. DA-AH01-70-C-0322.
- Maremont Corp., Saco, Maine. \$3,391,640. 7.62mm machineguns. Army Weapons Command, Rock Island, Ill. DA-AF03-70-C-0027.
- Rohm and Haas Co., Philadelphia, Pa. \$1,700,000. Propellant research program, Redstone Arsenal, Huntsville, Ala. Army Missile Command, Huntsville, Ala. DA-AH01-70-C-0146.
- AVCO Corp., Stratford, Conn. \$3,600,000. T-55L-11 turbine engines for CH-47C helicopters. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-70-C-0321.
- Kaiser Jeep Corp., Toledo, Ohio. \$114,915,178. 5-ton trucks, all body types. South Bend, Ind. Project Manager, General Purpose Vehicles, Warren, Mich. DA-AE06-69-C-0009.
- Western Electric Co., New York, N.Y. \$27,941,244. Production engineering and long lead time component manufacturing. Safeguard System Command, Huntsville, Ala. DA-HC60-68-C-0017.
- North Electric Co., Galion, Ohio. \$1,481,971. 12 emergency action console switchboards. Procurement Division, Army Electronics Command, Philadelphia, Pa. DA-AB05-70-C-3201.
- Western Electric Co., New York, N.Y. \$4,331,000 (contract modification). FY 1970 Nike Hercules engineering services, Burlington, N.C., and Titusville, Fla. Army Missile Command, Huntsville, Ala. DA-AH01-68-C-0405.



DEPARTMENT OF THE NAVY

- 1—Honeywell, Inc., Minneapolis, Minn. \$14,246,625. Rockeye bomb cluster components. N00019-70-C-0140. \$3,612,500. Fuel-air-explosive weapon system. N00019-70-C-0176. Naval Air Systems Command, Washington, D.C.
- McDonnell Douglas Corp., Long Beach, Calif. \$6,242,157. Triple and multiple bomb ejection racks. Torrance, Calif. Naval Air Systems Command, Washington, D.C. N00019-69-C-0681.
- Johns Hopkins University, Silver Spring, Md. \$1,800,000. Increased level of effort for advanced research on surface missile system. Naval Ordnance Systems Command, Washington, D.C. N0062-0604-C-2.
- 2—Western Electric Co., New York, N.Y. \$17,978,399. Oceanographic research and development effort. Bell Telephone Labs, Whippany, N.J. Naval Electronic Systems Command, Washington, D.C. N00039-70-C-3516.
- 3—Lockheed Aircraft Corp., Burbank, Calif. \$10,000,000 (contract modification). Incre-

- mental funding for the S-3A aircraft program. Naval Air Systems Command, Washington, D.C. N00019-69-C-0385.
- Westinghouse Electric Corp., Baltimore, Md. \$2,470,000 (contract modification). Modification kits to incorporate a digital computer replacing existing analog types in AN/APG-59 radar systems. Naval Air Systems Command, Washington, D.C. N00019-69-C-0064.
 - 6—Grumman Aerospace Corp., Bethpage, N.Y. \$4,500,000 (contract modification). Long lead time effort and materials in support of F-14A aircraft procurement. Naval Air Systems Command, Washington, D.C. N00019-69-C-0422.
 - McDonnell Douglas Corp., St. Louis, Mo. \$3,300,000 (contract modification). Parts and equipment for Air Force F-4E aircraft. Naval Air Systems Command, Washington, D.C. N00019-68-C-0495.
 - Williams Research Corp., Walled Lake, Mich. \$1,048,057. J400-WR-400 engines for MQM-74A aerial targets. Naval Air Systems Command, Washington, D.C. N00019-70-C-0116.
 - Thiokol Chemical Corp., Elkton, Md. \$1,439,000. Case and shroud forgings, special tooling and miscellaneous long lead time items for production of the Mk 67 Mod 0 rocket motor for the ZAP rocket. Naval Ordnance Laboratory, White Oak, Md. N60921-70-C-0034.
 - Lear-Siegler Inc., Grand Rapids, Mich. \$1,188,587. Components for the AN/AJD3 bomb loft release computer set. Naval Aviation Supply Office, Philadelphia, Pa. N00383-A-5504-0543.
 - M. Steinthal and Co., Inc., New York, N.Y. \$1,170,654. Mk 28 Mod 1, Mk 34 Mod 0, Mk 36 Mod 0 and Mk 37 Mod 0 parachute packs. Roxboro, N.C. Naval Ordnance Station, Louisville, Ky. N00197-70-C-0165.
 - 8—General Electric Co., Schenectady, N.Y. \$29,625,000. Nuclear reactor compartment components. Naval Ship Systems Command, Washington, D.C. N00024-69-C-5154.
 - General Electric Co., Utica, N.Y. \$17,244,682. Guidance and control groups for the Chaparral missile. Naval Air Systems Command, Washington, D.C. N00019-70-C-0088.
 - The Naval Ordnance Systems Command, Washington, D.C., issued the following contracts:
 - FMC Corp., Minneapolis, Minn. \$7,151,878. 5-inch 54-caliber gun mounts, Mk 45 Mod 0. N00017-68-C-4211.
 - General Dynamics, Pomona, Calif. \$2,445,000 and \$1,272,576. Supplies and services to investigate Terrier, Tartar and Standard missile performance. N00017-69-C-2209 Mods P001 and P002.
 - 9—Hughes Aircraft Co., Culver City, Calif. \$6,500,000 (contract modification). Incremental funding for the Phoenix missile program. Naval Air Systems Command, Washington, D.C. N00019-67-C-0240.
 - Singer-General Precision, Inc., Silver Spring, Md. \$3,064,554. 14B40 radar/MAD multi-station trainers for use at fleet airborne electronics units. Naval Training Device Center, Orlando, Fla. N61339-69-C-0075.
 - The Johns Hopkins University, Silver Spring, Md. \$4,951,000. Advanced classified research on surface missile systems. Naval Ordnance Systems Command, Washington, D.C. N0W 62-0604-C.
 - Loral Corp., New York, N.Y. \$1,018,500. Spare parts for maintenance and overhaul of AN/ALQ-78 electronic countermeasure equipment in P-3C aircraft. Naval Aviation Supply Office, Philadelphia, Pa.
 - 13—Sanders Associates, Nashua, N.H. \$14,748,472. Research, development and production of AN/ALQ-100 countermeasures sets. Naval Air Systems Command, Washington, D.C. N00019-70-C-0105.
 - United Aircraft Corp., East Hartford, Conn. \$2,439,000 (contract modification). Product support engineering services for T34, TF33/JT3D, J-57/JT3D and J-75/JT4 engines for the Air Force. Naval Air Systems Command, Washington, D.C. N00019-69-C-0367.
 - Lockheed Aircraft Service Co., Ontario, Calif. \$2,405,400. Modification of C-130A aircraft to DC-130 configuration. Naval Air Systems Command, Washington, D.C. N00019-70-C-0182.
 - 14—Aluminum Co. of America, Pittsburgh, Pa. \$15,544,084. Aluminum powder. Rockdale, Tex., New Kensington, Pa., and Alcoa, Tenn. Naval Ships Parts Control Center, Mechanicsburg, Pa. N00104-70-C-A047.
 - United Aircraft Corp., Stratford, Conn. \$3,685,536. Component parts for the dynamic drive system of CH-53A aircraft. Naval Aviation Supply Office, Philadelphia, Pa. N00383-69-A-3900-0950.
 - 15—General Electric Co., Schenectady, N.Y. \$48,950,000 (contract modification). Designing and furnishing nuclear propulsion components. Naval Ship Systems Command, Washington, D.C. N00024-69-C-5154 Mod. 8.
 - 16—Northwest Marine Iron Works, Portland, Ore. \$13,468,000. Conversion of the troop transport VC2-S-AP5 (ex-USS Sherburne, APA-205) to a Fleet Ballistic Tracking Ship (T-AGM-22). Swan Island, Ore. Naval Ship Systems Command, Washington, D.C. N00024-70-C-0224.
 - McDonnell Douglas Corp., St. Louis, Mo. \$1,000,000 (contract modification). Weapons dispensing, separation and jettison testing on F-4E aircraft. Naval Air Systems Command, Washington, D.C. N00019-70-A-0015.
 - 20—Singer-Precision, Inc., Little Falls, N.J. \$2,639,293. Spare parts for doppler radar systems for P-3C aircraft. Pleasantville, N.Y. Naval Aviation Supply Office, Philadelphia, Pa. N00383-68-3201-0181.
 - 21—Sparton Corp., Jackson, Mich. \$6,366,336 (contract modification). FY 1970 funding for AN/SSQ-53 sonobuoys. Jackson, Mich., and Deland, Fla. Naval Air Systems Command, Washington, D.C. N00019-69-C-0465.
 - 22—American Manufacturing Co. of Texas, Fort Worth, Tex. \$3,376,044. Mk 41 Mod 0 5-inch 54-caliber projectiles. Naval Ships Parts Control Center, Mechanicsburg, Pa. N00104-70-C-A008.
 - Texas Instruments, Inc., Dallas, Tex. \$2,886,120. Spare parts for AN/APS 115 radar systems for P-3C aircraft. Naval Aviation Supply Office, Philadelphia, Pa. N00383-69-A-1801-0148.
 - McDonnell Douglas Corp., Long Beach, Calif. \$1,533,005. Design, develop, fabricate and furnish graphite composite primary structural components for aircraft wingtype applications. Naval Air Engineering Center, Philadelphia, Pa. N00156-70-C-1321.
 - North American Rockwell Corp., Anaheim, Calif. \$7,278,684. Refurbishment and modification of Navy Ships Inertial Navigation Systems. Naval Ship Systems Command, Washington, D.C. N00024-70-C-5009.
 - Sperry Rand Corp., Charlottesville, Va. \$1,982,916. Small craft and amphibious vehicle gyrocompass systems. Naval Ship Systems Command, Washington, D.C. N00024-70-C-5226.
 - Philco-Ford Corp., Fort Washington, Pa. \$1,181,476. Engineering and technical services in the training of Navy personnel in the operation of communication, radar and sonar equipment. Naval Ship Systems Command, Washington, D.C. N00024-70-C-1077.
 - 23—Hughes Tool Co., Culver City, Calif. \$1,546,809. Replacement parts for the Mk 4 20mm gunpod. Naval Ships Parts Control Center, Mechanicsburg, Pa. N00104-67-A-0009-0232.
 - 24—Northrop Corp., Palos Verdes, Calif. \$23,518,000. Development of the Joint Services In-Flight Data Transmission System (JIFDATS). Naval Air Systems Command, Washington, D.C. N00019-70-C-0195.
 - 27—Straightline Manufacturing Co., Cornwells Heights, Pa. \$8,226,988. Mk 82 Mod 1 bomb fin assemblies. Naval Ships Parts Control Center, Mechanicsburg, Pa. N00107-70-C-A023.
 - General Dynamics Corp., Pomona, Calif. \$3,495,000. Procurement of materials for Standard missile production. Naval Ordnance Systems Command, Washington, D.C. N00017-67-C-2107.
 - Leland Stanford Jr. University, Stanford, Calif. \$1,235,000. Research and technology for the Nuclear Physics, Physical Sciences Division, Office of Naval Research, Office of Naval Research, Washington, D.C.
 - 28—The Naval Air Systems Command, Washington, D.C., awarded the following contracts:
 - Grumman Aerospace Corp., Bethpage, N.Y. \$11,300,000 (contract modification). Long lead time and materials for the EA-6B aircraft program. N00019-67-C-0078. \$9,000,000 (contract modification). Long lead time and material to support planned FY 1970 KA-6D aircraft program. N00019-68-C-0106.
 - Hughes Aircraft Co., Culver City, Calif. \$5,350,000. AN/AWG-9 airborne missile control systems. Culver City, Los Angeles, Canoga Park, and El Segundo, Calif., and Tucson, Ariz. N00019-70-C-0207.
 - LTV Aerospace Corp., Dallas, Tex. \$1,000,000 (contract modification). Flight demonstration program of JP-5 fueled, air-launched low-volume ramjet propulsion system. N00019-68-C-0605.
 - Hercules, Inc., Wilmington, Del. \$1,105,000. Solid propellant rocketry research. Cumberland, Md. Naval Ordnance Systems Command, Washington, D.C. N00017-70-C-4413.
 - Raytheon Co., Lexington, Mass. \$6,498,027. Electronic equipment. Bristol, Tenn. Naval Ordnance Systems Command, Washington, D.C. N00017-70-C-1405.
 - 29—General Dynamics Corp., Groton, Conn. \$8,850,000 (contract modification). Overhaul, refueling, and C-3 Poseidon missile conversion of the USS James Madison (SSBN 627). Naval Ship Systems Command, Washington, D.C. N00024-68-C-0256 P212.
 - Bell Aerosystems Co., Buffalo, N.Y. \$2,563,623. Aircraft carrier landing-control central trainers. Wheatfield, N.Y. Naval Ship Systems Command, Washington, D.C. N00024-70-C-1229.
 - The Naval Air Systems Command, Washington, D.C., issued the following contracts:
 - Grumman Aerospace Corp., Bethpage, N.Y. \$9,516,738 (contract modification). EA-6B aircraft. N0019-67-C-0078.
 - United Aircraft Corp., East Hartford, Conn. \$1,567,255. Fabrication of XJ-52-P-408 and YJ-52-P-408 aircraft engines. N00019-70-C-0070.
 - Stromberg Datagraphic, Inc., San Diego, Calif. \$6,115,500. AN/ASA-70 tactical display groups. N00019-70-C-0101.
 - Sundstrand Corp., Rockford, Ill. \$1,401,274. Constant speed drives for A-7E aircraft. N00019-68-C-0088.
 - 30—General Electric Co., Utica, N.Y. \$12,961,902. AN/AYA-8 data processing system for P-3C aircraft. Naval Air Systems Command, Washington, D.C. N00019-70-C-0124.
 - Johns Hopkins University, Silver Spring, Md. \$21,641,900. Advanced research on the Surface Missile System. Naval Ordnance Systems Command, Washington, D.C. N0W 62-0604.
 - United Aircraft Corp., Stratford, Conn. \$2,750,000 (contract modification). Long lead time effort and material for procurement of Air Force CH-53C helicopters. Naval Air Systems Command, Washington, D.C. N00019-69-C-0621.



DEPARTMENT OF THE AIR FORCE

- 1—Mitre Corp., Bedford, Mass. \$23,588,676. Research and development of advanced information and communications systems. Electronic Systems Division, AFSC, L.G. Hanscom Field, Mass. F19628-68-C-0365.
- Continental Aviation and Engineering Corp., Detroit, Mich. \$3,262,124. Production of J-69-T-29 aircraft engines. Toledo, Ohio. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0039.
- Western Electric Co., New York, N.Y. \$1,156,901. Engineer, furnish and install communications system for the telemetry data center, Air Force Western Test Range, Vandenberg AFB, Calif. New York, Kearney, N.J. and Vandenberg AFB. Air Force Western Test Range Hq., AFSC, Vandenberg AFB, Calif. F04697-70-C-0062.

- Cutler Hammer Inc., Deer Park, N.Y. \$8,124,647. Ground radar sets (AN/TPX-42), spare parts and change kits. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0207.
- Holmes and Narver, Inc., Los Angeles, Calif. \$1,835,820. Continuation of maintenance and operation of the Naval Research Site, Point Barrow, Alaska. Hq., Alaskan Air Command, Elmendorf AFB, Alaska. F65517-69-C-0001.
- 2—Republic Electronic Industries, Inc., Melville, N.Y. \$1,571,260. Airborne navigational aids (RT-471). Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-1334.
- Northrop Corp., Norwood, Mass. \$1,642,379. Gyrocompasses for Minuteman III guidance and control units. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-69-C-0235.
- McDonnell Douglas Corp., Tulsa, Okla. \$1,154,216. Modification of and production of component parts for A-1E aircraft. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-70-C-0220.
- 3—Dynamics Corp. of America, Bridgeport, Conn. \$2,680,653. Production of MB-16 diesel generator sets. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-68-0575.
- Lockheed Aircraft Corp., Marietta, Ga. \$6,190,198. Spare parts for C-5A aircraft. Detachment 31, San Antonio Air Materiel Area, AFLC, Marietta, Ga. AF33(657)-15053.
- ITT Technical Services, Inc., Paramus, N.Y. \$1,520,761 (contract modification). Maintenance and operation of Air Force Plant No. 42, Palmdale, Calif. Air Force Flight Test Center, Edwards AFB, Calif. F04611-68-C-0001.
- Phileo-Ford Corp., Fort Washington, Pa. \$1,797,874. Engineer, furnish and install a seven station, six link tropospheric scatter and line of sight communications system in Greece. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-70-C-0965.
- 6—North American Rockwell Corp., Anaheim, Calif. \$3,504,000. Engineering effort on Minuteman II. Space and Missile Systems Organization, Los Angeles, Calif. AF04-(694-786).
- Baifield Industries, Carrollton, Tex. \$3,163,711. Production of bomb fin assemblies for 750-pound bombs. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0268.
- F and M Systems Co., Dallas, Tex. \$1,923,000. Production of a teletype data multiplexer addresser system. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-70-C-0760.
- Dynalectron Corp., Fort Worth, Tex. \$1,224,235. Modification of C-130 type aircraft. Naha AB, Okinawa, Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-69-D-4415.
- 7—General Electric Co., Philadelphia, Pa. \$1,300,000. Research and development of the Mk 12 reentry vehicle. Space and Missile Organization, AFSC, Los Angeles, Calif. AF04(694)-975.
- 8—Collins Radio Co., Dallas, Tex. \$1,190,000. Communications electronics systems for an Air Force Satellite Control Facility. Richardson, Tex. Space and Missile Systems Organization, Los Angeles, Calif. F04695-67-C-0137.
- Lockheed Aircraft Service Co., Jamaica, N.Y. \$6,663,785. Inspect and repair as necessary C-121 type aircraft. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-70-C-0131.
- 9—The Ogden Air Materiel Area, AFLC, Hill AFB, Utah, issued the following contracts for SUU-30 bomb dispensers:
- Crescent Precision Products, Inc., Garland, Tex. \$3,056,420. F42600-70-C-0608.
- Batesville Manufacturing Co., Camden, Ark. \$2,244,130. F42600-70-C-0624.
- American Electric, Inc., LaMirada, Calif. \$3,759,258. F04606-69-A-0166.
- Wolverine Diesel Power Co., Detroit, Mich. \$2,144,904. Diesel generator sets. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-70-D-0039.
- 10—Lockheed-Georgia Co., Marietta, Ga. \$81,768,723. Production of 53 C-5A aircraft, run A. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33(657)-15053.
- Honeywell, Inc., Hopkins, Minn. \$1,589,910. Component parts for antipersonnel munitions. St. Louis Park, Minn. Armament Development and Test Center, AFSC, Elgin AFB, Fla. F08635-70-A-0029.
- 13—North American Rockwell Corp., Columbus, Ohio. \$3,629,000. Electro-optical guided bomb kits. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0336.
- 14—LTV Electrosystems, Inc., Greenville, Tex. \$2,100,000. Design, fabrication and test of ground data reduction systems (GS-3030). Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-00415.
- 15—IBM Corp., Gaithersburg, Md. \$1,335,060. Engineering services leading to development of improved computer programming techniques for specialized data handling. Various DOD installations. Rome Air Development Center, AFSC, Griffis AFB, N.Y. F30602-70-C-0056.
- Texas Instruments, Inc., Dallas, Tex. \$6,397,079. Bomb guidance kits. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0254.
- Whittaker Corp., Gardena, Calif. \$1,268,854. Bomb racks and modification kits. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0434.
- Superior Steel Ball Co., New Britain, Conn. \$2,969,400. Component parts for air munitions. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0655.
- 16—AVCO Corp., Wilmington, Mass. \$1,100,000. Development and flight test of advanced penetration aids. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-68-C-0289.
- Victor Comptometer Corp., Rogers, Ark. \$1,150,800. Production of component parts for air munitions. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0652.
- 17—Curtiss-Wright Corp., Wood Ridge, N.J. \$7,123,200. Overhaul of KC-135 and F-101 aircraft engines. San Antonio Air Materiel Area, AFLC, Kelly AFB, Tex. F41608-70-D-1101.
- 20—Lockheed-Georgia Co., Marietta, Ga. \$14,966,505. Spare parts for C-5A aircraft. Detachment 31, San Antonio Air Materiel Area, AFLC, Marietta, Ga. AF 33(657) 15053.
- Austin-Wright Construction Co., Inc., Oklahoma City, Okla. \$4,050,000. Construction of 226 family housing units, Mountain Home AFB, Idaho. Procurement Division, Mountain Home AFB, Idaho. F10603-70-C-0028.
- FWD Corp., Clintonville, Wis. \$3,062,800. Firefighting trucks. Warner Robins AFB, Ga. F09603-69-C-0074.
- General Motors Corp., Indianapolis, Ind. \$1,999,998. Spare blade assemblies for C-130A/D aircraft. Warner Robins AFB, Ga. F34601-69-A-2021.
- Kilgore Corp., Toone, Tenn. \$1,375,000. Target markers. Armament Development and Test Center, Eglin AFB, Fla. F08635-70-C-0002.
- Littion Systems Inc., Woodland Hills, Calif. \$3,165,950. Inertial navigational systems component parts and related aerospace ground equipment. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0295.
- 21—Continental Aviation and Engineering Corp., Detroit, Mich. \$2,839,050. J-69 engines and spare parts for T-29 aircraft. Toledo, Ohio. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0127.
- Lockheed Aircraft Corp., Sunnyvale, Calif. \$1,119,858. Research on reentry vehicles. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-68-C-0157.
- 22—American Electric Inc., LaMirada, Calif. \$9,234,164. Production of 500-lb. bombs. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0728.
- 23—Honeywell, Inc., Hopkins, Minn. \$4,725,000. Production of air munitions. St. Louis Park, Minn. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0659.
- Hayes International Corp., Birmingham, Ala. \$3,912,417. Inspection and repair as necessary, maintenance and wing structure modification of C-124 aircraft. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-69-C-0029.
- The Boeing Co., Wichita, Kan. \$1,602,231. Depot level maintenance of B-52 aircraft. Oklahoma City Air Materiel Area, Tinker AFB, Okla. F34601-69-C-3987.
- Curtiss-Wright Corp., Caldwell, N.J. \$1,269,282. Overhaul of propeller assemblies for C-124 and C-133 aircraft, and T-34 test cells. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-70-D-0632.
- The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, issued the following contracts:
- General Electric Co., West Lynn, Mass. \$4,583,400. J-85-GE-4 and T-64-GE-413 engines. F33657-69-C-1214.
- Sylvania Electronic Systems, Needham Heights, Mass. \$2,021,418. Portable multi-channel radios. F33657-70-C-0495.
- Singer-General Precision, Inc., Pleasantville, N.Y. \$1,159,900. Aerospace ground equipment for airborne radio navigational aids. F33657-68-C-0924.
- 24—Hayes International Corp., Birmingham, Ala. \$4,475,837. Inspection and repair as necessary, maintenance and modification of C-130 aircraft. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-70-C-0793.
- Gibbs Die Casting Aluminum Corp., Henderson, Ky. \$1,033,337. Component parts for munitions. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F42600-70-C-0660.
- AVCO Corp., Wilmington, Mass. \$1,982,000. Design and flight testing of reentry vehicles and penetration aids launchers in support of the anti-ballistic missile defense program. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-68-C-0278.
- 27—TRW Inc., Redondo Beach, Calif. \$2,650,000. Systems engineering and technical direction in support of Hard Rock Silo development program. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-69-C-0210.
- 28—The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, awarded the following contracts:
- Honeywell Inc., St. Petersburg, Fla. \$3,400,000. Development of an advanced aircraft navigation system. F33615-70-C-1044.
- General Electric Co., Evandale, Ohio. \$30,000,000. C-5A aircraft engines. AF33(657)15003.
- FED Sign and Signal Corp., Aircraft Equipment Co., Miami, Fla. \$3,315,170. Maintenance platforms, spare parts and aerospace ground equipment for the C-5A aircraft. AF33657-70-C-0412.
- Mitre Corp., Bedford, Mass. \$3,712,000. Research and development of advanced information and communication systems. Electronic Systems Division, AFSC, L.G. Hanscom Field, Mass. F19628-68-C-0365.
- Radiation Inc., Melbourne, Fla. \$4,890,000. Research and development of airborne electronic equipment. Palm Bay, Fla. Electronic Systems Division, AFSC, L.G. Hanscom Field, Mass. F19628-70-C-0005.
- 29—North American Rockwell Corp., Anaheim, Calif. \$1,894,650. Guidance and control systems for the Minuteman III system. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. AF 04(694)-904.
- McDonnell Douglas Corp., St. Louis, Mo. \$2,037,000. Electronic countermeasure pod suspension kits for F-4 series aircraft. Roberton, Mo. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F34601-69-A-2245.
- Westinghouse Electric Corp., Baltimore, Md. \$17,200,223. Airborne countermeasure equipment. Aeronautical System Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-0440.
- 30—General Motors Corp., Indianapolis, Ind. \$3,922,927. Engineering effort to improve the component parts of the T-56 engine. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-0046.
- Collins Radio Co., Cedar Rapids, Iowa. \$1,225,008. ARC-105 UHF transceiver systems and data. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0046.
- Sundstrand Corp., Rockford Ill. \$4,557,000. Constant speed drives and gear boxes for aircraft. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-68-A-2298.
- Wall Colmonoy Corp., San Antonio, Tex.

\$1,532,124. Repair of component parts of aircraft jet engines. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F41608-69-D-0623.

- Computer Sciences Corp., El Segundo Calif. \$4,305,395. Development, installation, operation, test and maintenance of equipment to improve the capability of the space track system. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-69-C-0503.
- 31—Honeywell Inc., Tampa, Fla. \$2,506,664. Multiplexer sets, AN/UCC-4, and associated spare parts. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-70-C-1405.
- Raytheon Co., Waltham, Mass. \$1,628,000. Electron tubes for AN/ALT-28 airborne electronic countermeasures equipment. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-69-C-3159.
- North American Rockwell Inc., Anaheim, Calif. \$1,490,915. Spare parts and data in support of Minuteman III weapon system. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F04701-68-C-0174.

OFF-SHORE PROCUREMENT

- 16—Canadian Commercial Corp., Washington, D.C. \$5,465,070. Interservice depot level maintenance of T-39 aircraft. Northwest Industries, Ltd., Winnipeg, Manitoba, Canada. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif. F04606-70-C-0236.

Mobile Missile Trackers Sought by Army

Performance characteristics for the development of a Mobile Target Tracking System (MTTS), prepared by the Combat Developments Command (CDC), Fort Belvoir, Va., have been approved by the Department of the Army.

MTTS was conceived to provide mobile air-transportable tracking stations for missile ranges lacking facilities for support of research, development tests, evaluation and training flights of target missiles.

Completely mobile, via standard Army trucks or transport aircraft, the system would provide launch, in-flight operation and recovery control over all missiles now in the Army plus those being developed for future use.

CDC requirements call for line-of-sight control over missiles over a range up to 120 nautical miles and 40,000 feet, with range accuracies of plus or minus 100 yards. Close-in control would be to a minimum of 300 feet above terrain level at 12 nautical miles, without ancillary equipment.

Total weight of the receiver, transmitter, antenna and digital subsystem would be 5,000 pounds or less. Reliability would be 80 percent per mission—from launch to recovery—barring destruction by the air defense missile. Mission duration capability calls for a minimum 30 minutes.

Logistics Service Center

(Continued from page 12)

Battle Creek, Mich. 49016, or call (616) 962-6511, extension 6601.

Surplus Sales

One of the better known services of interest to industry provided by DLSC is the DOD surplus sales program.

Improved supply management materiel utilization efforts have in large measure attributed to the decline in the percentage of usable items sold during the past few years. From a taxpayer's point of view, this is a good trend. DLSC still operates a big business and continues to sell hundreds of millions of dollars worth of desirable surplus industrial type items. Most of the center's product line is industrial in nature. Therefore, the majority of over 30,000 active buyers on the DLSC mailing list are commercial and industrial buyers.

Many buyers are using items once thought purely military in nature to help them produce commercial products. For example, high-speed tractors are in demand by utility companies because of their high flotation characteristics. They are used for ditching, to lay pipelines, and to clear marshlands.

Surplus electronic gear is sold not only as consumer items, but as industrial products. Surplus chemicals are used in the chemical processing industry. Marine items, including vessels, are used on the inland waterways.

One of the desirable aspects of buying government surplus items is that normally no salesman will call. However, once DLSC market researchers determine a need for an outlet or identify a marketing target, a personal sales approach may be utilized. This is known as our "Knock On The Door Policy." For the most part, however, DLSC's marketing communications involve direct mail in the form of sales catalogs and, occasionally, special brochures and flyers. After a company is entered on the DLSC mailing list, its purchasing agent will be apprised of only those items that the company needs to produce its product or service. DLSC surplus property customers are not burdened with extraneous mailings.

To receive pertinent information,

simply notify the Director of Marketing, Defense Logistics Supply Center, P.O. Box 1370, Battle Creek, Mich. 49016, that you are interested in bidding on DOD surplus materiel, or call (616) 962-6511, extension 6701. A brochure delineating the over 523 classes of property sold by DLSC, primarily through 10 sales offices, will be mailed to you. Included in this package will be an application form that will enable you to indicate, by code number, the kinds of items you are interested in and the geographical area in which you are willing to travel to inspect the materiel. Your completed application will be programmed into the DLSC computer and, when items in which you have expressed an interest become available for sale, you will be automatically mailed an invitation for bid.

Practically all merchandise is sold on a competitive basis of some form, using either the sealed bid, spot bid, or auction method. Under special circumstances and unusual conditions, certain items may be sold by negotiation. The majority of the hundreds of millions of dollars worth of items are sold using the sealed bid method. Therefore, in most cases, a potential buyer does not have to be present to bid. We do encourage prospective bidders to inspect materiel before bidding.

In summary, DLSC's services of interest to industry are continuous, are increasing, and they are varied. All of them are designed to enhance supply efficiency and reduce costs—a concern of the Government and private sector.

Changing Address?

When requesting a change in address or cancelling a subscription, readers must send the mailing label from the back cover of the magazine. Without this label, changes cannot be made in the computerized list. Do not alter or deface the label.

Allow two months for change of address to be effected.

The new address and old label should be sent to: Editor, Defense Industry Bulletin, Defense Supply Agency, Room 4A 508, Cameron Station, Alexandria, Va. 22314.



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Air Force Develops Television Reconnaissance Viewfinder System

The Air Force is developing a television viewfinder system for reconnaissance aircraft to replace the old style "light pipe," or optical viewfinder.

The system consists of four components:

- Instrument panel mounted control indicator.
- Downward-looking television camera with a 15mm lens and a 40-degree field of view.
- Forward-looking camera with a 15-150mm zoom lens and a variable field of view from 5 to 48 degrees.
- Power supply synchronizer.

The viewfinder has video tape recording capability, but no recorder has been chosen.

More flexible than the optical viewfinder, the new system does not require any structural changes in the aircraft. The viewfinder system provides the pilot with a display of the fields of view of his film cameras to assist in locating, identifying and photographing desired targets. Effective altitude range of the system is from 500 to 20,000 feet. Field of view coverage is from seven degrees below the horizon to five degrees behind the nadir.

Originated by the Air Force Systems Command's Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, for use in the RF-101 Voodoo aircraft, the system is also being considered for other applications. Prototypes of the viewfinder were produced by Fairchild Space and Defense Systems, Paramus, N.J.

Preliminary tests at the Tactical Air Reconnaissance Center, Shaw AFB, S.C., have shown that the display can be viewed from any normal head position in the cockpit, an advantage over the optical tube system which required the pilot to be looking down into an eye-lens device.

C. F. Weis, of the ASD Directorate of Reconnaissance Engineering's Optronics Branch, is project manager.

New Computerized Systems Being Placed in DSA Centers

The Defense Supply Agency (DSA) is placing a new computerized materiel management system in operation to give its supply centers increased capability. The new Standard Automated Materiel Management System (SAMM) has been installed and is operational at the Defense Construction Supply Center, Columbus, Ohio.

Centers scheduled to receive SAMMS installations during 1970: Defense Industrial Supply Center, Philadelphia, Pa.; Defense General Supply Center, Richmond, Va.; Defense Electronics Supply Center, Dayton, Ohio; and Defense Personnel Support Center, Philadelphia, Pa.

SAMMS is a uniform system designed to perform major materiel management functions, such as processing, requirements computation, pricing, cataloging, provisioning, procurement, financial management and reporting.

The system was designed, programmed and tested by DSA's Data Systems Automation Office, Columbus, Ohio.